THE HARLEY STREET CALENDAR

H H Bashford

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THE HARLEY STREET CALENDAR

by the Same Author

THE CORNER OF HARLEY STREET

PITY THE POOR BLIND

VAGABONDS IN PÉRIGORD

THE PLAIN GIRL'S TALE

HALF-PAST BED TIME

THE HAPPY GHOST

BEHIND THE FOG

THE HARLEY STREET CALENDAR

By H. H. BASHFORD

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TO

S. R. C. PLIMSOLL

In the following brief attempt to frame in the setting of their times a few typical figures of English-speaking medicine, it has been impossible to acknowledge every source of indebtedness. For certain details, however, otherwise unavailable, particular thanks must be recorded to the Misses Lister, the late Lady Osler, Lady Willert, Dr. W. W. Francis, Sir W. T. Lister, Dr. G. C. Peachey and Professor J. Y. Simpson.

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I

GILBERT AND JOHN

Upon the April night when medieval England put on immortality at the Tabard Inn, it is pleasant to recall, at any rate for a few of us, that there was a physician in the company. He was not perhaps the noblest of its members, nor was his tale one of the most original. But his general demeanour, as Chaucer has represented it, was at least consonant with the dignity of his profession. And he has been given the credit, in his own subject, for a tolerably wide amount of reading. Indeed he was familiar, so his creator assures us, with no less than fifteen medical authorities, ranging from Æsculapius, Hippocrates, and Galen to the most recent of the Arabian professors. And Chaucer has been kind enough to include in the list two of his own fellow-countrymen.

These were Gilbertyn and Gatesden, as Chaucer describes them—Gilbert the Englishman and John of Gaddesden—and since they have come down to us linked for ever in the prologue to the *Canterbury Tales*, it is not unfitting, perhaps, that they should head the procession of post-Conquest English medicine. Moreover, without stressing the point unduly, since the

character of each must be chiefly deduced from his writings, it seems possible to discern in them, already in being, two very recognizable medical types—in Gilbert the scholar, serious and detached, in John the first of the fashionable physicians.

That is not to suggest, of course, that they were without predecessors in a still more primitive England. Long before the birth of Gilbert, in the reign of Henry II., some sort of medicine had been practised in these islands. And it is not improbable even, as we have been reminded, that men who had consulted Galen as to their health had paused to greet one another, and possibly discuss their symptoms, upon the Roman causeway in Cheapside. But that had been long since in the greater days both of Rome and medicine. Even before the legions had been recalled from Britain, there had begun to ebb from the Roman Empire all real knowledge of the great Pergamite's work and the lofty traditions that lay behind it. The dissections and experiments by which he had already established, during the second century after Christ, the origin of the nerves, for instance, and their functions, and the nature and purposes of the various muscles—these had never been repeated. And what little of his knowledge had returned to England with Augustine and his followers had been almost submerged by the decadent mysticism of the later Greek theorists.

Nevertheless it seems clear that, thanks to these missionary clergy and the schools founded by them in association with their churches, certain elements of the old Greek teaching had been introduced into Anglo-Saxon practice, and equally clear that the Anglo-Saxons themselves possessed a by no means negligible native art. Much of this was fantastic, of course, a system of charms connected with ancient tribal beliefs. But it also included a popular herbal lore evidently based upon practical experience. By the end of the ninth century, therefore, it may be said that English medicine had become a blend of four separate streams—legendary versions of Hippocrates and Galen, derived at second-hand from their Græco-Latin successors; a considerable infusion, from the same source, of Mediterranean and Oriental magic, discreetly tinctured with Christianity but unchanged in essence; a native contribution of the same kind, similarly Christianized and to the same extent; and a perhaps more trustworthy botanical lore, both indigenous and imported.

As for its practitioners, since medicine was still a proper study for many of the higher and monastic clergy, these may be regarded, whether Saxon-born or Continental, as having been its chief exponents. But there may also be divined from the works of Bede an inferior order of '*medici*' or leeches, who acted under their instructions and seem to have been entrusted with most of the surgical operations.

There were almost certainly, too, in every scattered community, local herbalists and hereditary cure-mongers. And there is no reason to suppose that they were markedly less efficient than their corresponding fellows upon the Continent. Indeed, at the time of the Conquest, there was probably little to choose between the general level of Anglo-Saxon doctors and those to be found practising the same art in the better educated countries of Europe. And there had appeared in none of these, where the Latin tongue was the only educational literary medium, anything in the vernacular at all comparable with the Anglo-Saxon *Leech Book* of the physician Bald.

Whether Gilbert had read it will probably never be known. But it must have been part of his mental heritage. And since it is the earliest medical treatise composed in the British islands, or at any rate the earliest that has survived destruction, it is interesting to pause for a moment and turn its pages, if only for what they reveal of its creators. For though Bald is described as having been its sponsor—it was written soon after the death of Alfred the Great—it was actually transcribed by one Cild, perhaps a secretary, at Bald's behest. Whether the latter, like Bald, was himself a leech—they were both probably monks—must be left a matter of doubt. But that he was not altogether the meek scribe the following passage seems to show. Thus 'against bite of snake,' runs a

part of the manuscript, 'if the man procures and eats rind which cometh out of Paradise, no venom will damage him. Then said he that wrote this book that the rind was hard to be gotten'. And as Cild permitted himself the small liberty, we may surely imagine its accompaniment—the momentary deepening of a crease or two on that solid and impassive Saxon countenance.

There is a familiar ring, too, about some lines of Bald occurring at the end of the second volume, in which after telling us that he is the owner of the book, which he had ordered Cild to write, he goes on to add, 'Earnestly I pray here of all men, in the name of Christ, that no treacherous person take this book from me, neither by force, nor by theft, nor by any false statement. Why? because the richest treasure is not so dear to me as my dear books, which the grace of Christ attends'—a legend that must since have been inscribed, a trifle less politely perhaps, and in a more schoolboy hand, by at least as many fifth-form descendants of Bald as there have been schools in England.

But, apart from all this, the book itself is a fascinating mirror of Anglo-Saxon medicine, modelled though it is, in its earlier chapters, after the current Greek fashion. Diseases are dealt with, that is to say, geographically, as they affect each portion of the human frame, maladies of the head, for example, including 'half-head's ache,' sore throat, hare-lip, sundry affections of the eye and ear, and even the spitting of blood—

presumably because this appears at the mouth. There then follow leechdoms against a variety of tumours, remedies for snake-bite, of which we have seen an example, advice upon certain internal and abdominal complaints, and a number of more or less complicated prescriptions. Thus the components of a 'quieting drink' include betony, helenium, wormwood, ontre, horehound, lupin, wen-wort, yarrow, dwarf dwostle, and fieldmore, or wild carrot. In most cases these herbs were administered as 'simples'—watery infusions, or infusions of the herb in vinegar, ale, or milk. But they were also given as confections made up with honey, or applied as ointments mixed with butter.

As regards the charms in popular use, and of which the *Leech Book* contains many examples, these were of various types, and included the wearing of amulets; the saying of prayers in connection with certain herbs; the uttering of formulæ now quite unintelligible, and probably even then so to the utterers; the relating of stories, Biblical and otherwise, appropriate to the particular occasion; and the performance of ceremonies so obviously pagan that they have only been dragged into Church, as it were, at the last moment. Thus 'if wens pain a man in the heart,' it says, ' let a maiden go to a spring, which runs due east, and ladle up a cupful, moving the cup with the stream, and sing over it the Creed and Pater Noster, and then pour it into another vessel and ladle up some more, so as to have these

cups full. Do so for nine days; soon it will be well with the man'. And there are no directions as to the patient drinking the water. Or again, 'for flying venom and every venomous swelling. On a Friday churn butter which has been milked from a neat or hind all of one colour; and let it not be mingled with water. Sing over it nine times a litany and nine times the Pater Noster and nine times this incantation,' whereupon follow some lines of apparently corrupt and incomprehensible Latin.

As in other countries, too, there was a firm belief in unlucky or 'Egyptian' days, and there is an odd reflection of this in a Latin tract, the only medical work quoted by Bede. It was concerned with blood-letting; and while this may be performed, it says, in acute cases at any moment, the moon and seasons should, as a rule, be very carefully considered. Equally curious, and perhaps older in origin, were the favourite charms by narrative. There was the story commonly told to sufferers from toothache of how Christ, observing Peter in similar distress, uttered a long adjuration to neuralgia that it should cease from troubling the servants of God. For a stitch in the side there was recalled the tale of Longinus, the fabled centurion whose spear pierced our Saviour. And the crying of 'Lazarus, come forth,' over a woman in child-birth continued to be practised late in the Middle Ages.

But in many other respects, though even in these,

perhaps, the modern psychologist would detect some value, the medicine of the time was not wholly lacking in a certain insular common-sense. The *Leech Book* suggests, for example, very reasonably, that broken limbs should be wrapped in softened elm bark; while its advice upon pleurisy, that this should be treated with an initial purge and the applying of poultices, is considerably sounder than that of a Dr. Clark—an Edinburgh notability of the eighteenth century—whose panacea for the same condition was a ball of dried horse dung to be drunk in water.

Whatever its merits, however, it has to be admitted that no great figure had emerged from Anglo-Saxon medicine. And it remained for Gilbert, born, as far as can be judged, a hundred years after the Battle of Hastings, to become the first Englishman, medically speaking, who achieved a European reputation. By then the gradual fusion of Norman and Saxon was well on the way to its final accomplishment, though the average Island doctor, at any rate in the country, was probably much the same as he had been for centuries. Despite various Church Councils beginning to be promulgated against the study of medicine by the 'regular' clergy, he was still some local monk, that is to say, or parish priest, uneasy in his French and rusty in his Latin, living with his people under the wing of the manor, and himself not far removed from the villein order. For the inhabitants of the great house, if

these had remained Saxon, he was probably, in illness, the first line of defence, some neighbouring abbot, or divine from the nearest town, being called in if necessary as a consultant. But he was not the sort of person that the new Norman aristocrats, even if they had understood his language, would have been likely to trust. And most of the leading physicians, attached to the Court and castles, were foreigners who had been trained on the Continent. There were possibly men of this type, too, in the principal towns, where, thanks to the policy of Henry I., the beginnings had appeared, recruited from the various grammar schools, of an educated middle-class laity. Such were the sheriffs and their assistants, the administrators and clerks of the Exchequer, and the lawyers connected with the Royal Courts of Justice, many of them originally of humble birth. And though there is no direct evidence that Gilbert sprang from this class, it is clear that he must have had a good general education.

Where this took place is again beyond verification, but wherever he was born and brought up, there would have been no great difficulty for his parents in discovering an appropriate school. There would have been three in London, for instance, attached to St. Paul's, to St. Mary-le-Bow, and St. Martin-le-Grand, and at all three of them he would have been taught, in French, the rudiments of Latin, rhetoric and logic. At such ancient schools, too, as those of Canterbury,

Winchester, York and Sherborne, and at a score of similar country foundations, boys were being educated to the university age. And although, strictly speaking, there was as yet no university, there was already the nucleus of one at Oxford, to which, during Gilbert's childhood, there was a great access of students, recalled by Henry II. from the schools of Paris.

On the other hand, there were no such centres of medical teaching as had already been established on the Continent. And apart from the leper-houses, an odd hospital or so, like that of St. Bartholomew's in London, and the efforts of the religious orders, particularly the Augustinians—who bore 'for Christ's sake,' according to a contemporary writer, ' the filth and impurities of the patients and the annoyance of almost unbearable smells'—there was no organized treatment of the sick. It was almost inevitable, therefore, that the young Gilbert should have looked abroad for his final training, and our first real knowledge of him is as a student at the leading European medical school.

This was at Salerno, founded, according to one tradition, by Charlemagne in 802, and according to another, by refugees from Alexandria fleeing from the Saracens a hundred and fifty years earlier, but probably the gradual result of the town's advantages as a focus for wandering scholars. In any case its position, just south of the Bay of Naples, had been peculiarly favourable to its development, partly owing to the survival in

the neighbourhood of a certain knowledge of the old Greek language; to the Benedictine library of medical manuscripts at Monte Cassino, some eighty miles distant; and to the fact that it was a harbour town, upon one of the principal trade-routes and the highway followed by the crusades. It had thus not only accumulated, by the time of Gilbert, a considerable amount of clinical material, but, thanks to the reports of returning travellers, a great international prestige. And it had also become, or was in the process of becoming, the first Christian receptacle in Europe of the new medical knowledge that had been travelling westward with the soldiers of Mahomet.

This consisted in part of a clearer re-statement of the older and more scientific Greek medicine—not at first hand, since the earliest documents were only studied again at the Renaissance, but in the purer tradition that had survived in the East and been welcomed and preserved by such men as Haroun al Raschid. But much of it was really new in the sense that, with that astonishing Mahomedan invasion—an invasion that was to build for a moment an empire reaching from the Indus to the Atlantic—various diseases, including small-pox and measles, hitherto unrecognized in Europe, had been differentiated and accurately described. Moreover the Arabians, though their love of astrology had led them to emphasize this in their medical systems, were as free as the first Greeks from

the particular supernatural elements that had since crept into European practice.

With the translation of their works, therefore, into Latin, and their acceptance and study at Salerno, European medicine had begun to experience a new and revivifying impulse. And even before this, the great Mediterranean school had become responsible for some sound teaching. Its *Regimen Sanitatis*, written in Latin verse, and known to almost every educated practitioner, contained such wisdom as the following, taken from an English translation of 1607,

> Great Suppers do the stomacke much offend,
> Sup light if quyet you to sleepe intend,

or again,

> Good dyet is a perfect way of curing
> And worthy much regard of health assuring.
> A King that cannot rule him in his dyet
> Will hardly rule his Realme in peace and quyet.

It was accordingly to Salerno that Gilbert went, where it seems pretty clear, from his own writings, that he was a fellow-pupil with the famous Gilles de Corbeil, afterwards physician to King Philip of France. He seems to have been there, too—possibly on the quay—when the little one-masted, clinker-built vessels staggered into port with Richard and his crusaders in the autumn of 1190. There is at any rate a tradition that he became medical attendant to Richard's right-hand man, Hubert Walter. And since we know that he

travelled in the East, with a physician's eye—he tells us of a Christian canonicus suffering from rheumatism whom he happened upon at Tripoli, in Syria—he may well have accompanied Walter through the following campaign. He may even have returned to England with him, though there is no evidence of this. And at some time afterwards he is said to have been Chancellor of Montpellier, where another medical school, heavily frowned upon by Gilles de Corbeil, was rising into a fame second only to that of Salerno. In any case, much of his life seems to have been spent in France, and, according to Littré, there existed, in the fourteenth century, a street near the Paris schools known as the Rue Gilbert l'Anglois.

But it was chiefly to his *Compendium* or, as it was sometimes called, his *Laurea Medicinæ* that Gilbert owed his fame—a book that still survives, in manuscript form, in several English libraries, and which was printed (seven hundred pages of it, in double columns of impacted Latin) at Lyons in 1510 and again at Geneva in 1608 as the *Laurea Anglicana*. It was divided into seven parts, devoted respectively to fevers; diseases of the head and nerves; diseases of the eye and face, including the ears; respiratory complaints and affections of the external members; diseases of the intestines; diseases of the liver, spleen and kidneys; and diseases of the generative system, with chapters upon cancer, gout, skin complaints and poisons. In fact, like the

treatise of Bald, or a general text-book of to-day, its object was to cover the whole field of medicine, although it also contains a certain amount of original observation and research.

Gilbert seems to have been the first authority, for instance, to call attention to the contagious nature of small-pox and its possible conveyance by what he describes as 'the fumes' of the sufferer. With regard to cancer, too, he makes the statement that it will yield to no medicine but surgery. And he has some shrewd things to say concerning diet, and notably for those travelling at sea. These he urges to purify their drinking water, if necessary by distilling it through the alembic, and he further advises them—seven hundred years in advance of our modern knowledge of vitamins—to be sure that they take on board with them plenty of dried grapes, apples and pears. He also quotes largely, often, it is feared, without acknowledgment, from the newly-translated Arabian and Persian writers—men such as Rhazes, Avicenna, and the contemporary Averroes of Cordova. And he seems to have appreciated the great Hippocratic aphorism that the true doctor is but Nature's minister.

At the same time, it is clear that he continued to share the still unrouted belief in magic, and he includes in his treatise an impressive list of the legendary 'antidotes,' or compound medicines. There is the Potio Sancti Pauli, based upon a formula said to have

been composed by the great apostle; the plaster of St. Peter and St. Paul; and the famous Esdra Magna, containing a hundred ingredients, attributed to the prophet Ezra while in exile in Babylon. He can find room, too, for such a prescription as that based upon the advice of Cophon 'to feed a chicken with white Hellebore, and after eight days to kill it and make broth of it, which he tells us is a very good gentle purge.'

When all has been said, however, and making allowances for his time, he seems to have been a man of colossal reading, not altogether lacking in an independent judgment, and obviously a force that his own world reckoned with. Thus, he is quoted by name in the *Treasury of Poor Men*, a book of popular medicine, written about 1270, and again in a volume of surgery, written about the same time by Theodoric, Bishop of Cervia. And he was evidently an honoured memory in his native land at the birth of the sprightlier John of Gaddesden.

This was in 1280, fifty years after Gilbert's death, and in the Hertfordshire village from which he takes his name, there is still to be found, at the gates of Ashridge Park, a pleasant old house alleged to have been his. From internal evidence this hardly seems likely, though he was obviously associated with the district, and may possibly have been related to a John and Margaret de Gatesden, the holders of a small neighbouring manor. But nothing is really known about

his parents except that his father, as he has confided to us, was fond of fruit and milk, and, oddly or otherwise, of a somewhat choleric temperament. He also developed, later in life, a salivary calculus which his son removed, and may therefore be presumed to have been comparatively young when John appeared in the world.

As for Little Gaddesden, then in the deep country and a full day's journey or more from London, the principal land-owners, at the time of his birth, were Geoffrey de Lucy and the Earl of Cornwall. When John was five years old, however, the latter bestowed his estate upon a religious foundation—the college of Bonhommes at Ashridge—with fullest rights as lords of the manor, return of writs, view of frank-pledge, assize of bread and ale, gallows, tumbril and pillory, and freedom from all suits at the hundred court. And it was possibly to this great house, half a mile away in the woods, that John was sent for his first lessons. Otherwise the nearest schools would probably have been those at St. Albans, where a new one had just been established, its founder having stipulated that the sixteen poorest scholars should not be asked to pay fees.

But it was not until he was at Merton, founded some thirty years earlier, that John emerges, as it were, into authenticity. And it is interesting to note that, since the days of Gilbert, Oxford had definitely produced a

medical school. It was still, on the practical side, inferior to that of Salerno, where it was at least customary to dissect a pig, and where the student was obliged, at the end of his course, to work under a doctor in general practice. But academically, judged by the time consumed, its curriculum seems to have been fairly exigent, a Master of Arts requiring four years before he was able to qualify in medicine. During the last two of these he was expected to conduct arguments with doctors appointed by the University, and included amongst his text-books were the *Regimentum Acutorum* of Hippocrates, the *Liber Febrium* of Isaac—a centenarian Hebrew, who had flourished in Egypt during the ninth and tenth centuries—and the *Antidotarium* of Nicolaus Præpositus, the standard pharmacopœia of the time. Apparently it was quite possible, however, to leave Oxford as a fully-fledged doctor of medicine without ever having seen a patient, performed a dissection, or done an atom of practical work.

But it was upon London that John had set his eyes. And from what he has permitted us to deduce, so small an obstacle as a lack of practical experience was not very likely to have deterred him. For though such a countryside as he had been brought up in, where even the de Gatesdens, no doubt, still ate with their fingers, might not have altered much since the days of Gilbert, in London it was far otherwise. With its thirty thousand people and its great markets, with its

merchants living softly, some of them in glass-windowed houses, with its Florentine bankers and German commercial travellers, and its wealthy and powerful city officers, there had already grown up in it a population eminently adapted to his purpose. Even in such outside villages as Strand and Holborn men of means were beginning to build houses, while two-masted vessels of as much as three hundred tons, owned by Englishmen and carrying English goods, were laying the foundations of a new and still more prosperous industry.

There was no longer any need, therefore, to go abroad, as a fellow-Hertfordshire man had done before him—an inexplicable person, one John of St. Giles, who had built up the richest practice in Paris, and then given it all away, on the spur of the moment, to become the first English Dominican. Not that John had any objection to holy orders. He was destined himself to hold a stall in St. Paul's—the eighth, to be precise, on the left side of the choir, with the corps of the prebend at Tillingham in Essex, and the psalms proper for daily recitation the 17th to the 21st. But meanwhile there was one's living to be considered. And for anything that he may have lacked in his Oxford training, he was very soon to make ample amends in his rapidly-growing London practice.

Indeed, according to the medical historian, Dr. John Freind—writing with the slight condescension

of an eighteenth-century physician to surgery—he not only dabbled in this inferior craft, but was willing, if he were paid for it, to draw his patients' teeth, cut their corns, and even kill their lice. Throughout his career, in fact, he seems to have been singularly free from anything that could be described as false modesty. And when, in his middle thirties, he composed his *Rosa Medicinæ*—in five parts, as a rose has five sepals —he assured his readers that, even as a rose excels every other flower, so it excelled all previous works on medicine.

Like Gilbert's *Compendium* and Bernard de Gordon's *Lilium*—a more recent book by a famous French scholar—it was chiefly a repetition of other people's sayings, but it quickly attained a great success. There was an Irish translation of it in 1450. It was printed at Pavia in 1492, at Venice in 1517, and at Augsburg in 1595. And it may safely be assumed to have played its part in his own increasing prosperity. It seems at any rate clear that he was employed as a physician by Edward II. and possibly Edward III. And he is said by Freind and various later historians to have been the first Englishman to receive such a post. In view of the fact, however, that an earlier Oxonian, Nicholas Ferneham, afterwards Bishop of Durham, had been domestic physician to Henry III., this would appear rather doubtful. And there is an English-sounding ring about Master Nicholas Tynchewyke, vicar of

Reculver and lecturer in medicine at Oxford, to whom Edward I. in 1306 had declared that under God he owed his life. But, however this may be, John was certainly called in when one of the royal family fell ill with the small-pox, and was fortunate enough to effect, so he tells us, a very remarkable cure.

Whether this was an anticipation of a future light-therapy is hardly a matter, perhaps, for present discussion. But he wrapped the patient in a scarlet cloth and confined him in a bedroom hung with scarlet curtains, with the happy result that he emerged unimpaired, '*sine vestigio variolarum.*' Another recommendation of his, the wearing for colic of a seal-skin girdle with a whalebone buckle, has been said to have introduced the familiar 'cholera-belt' of a still undeparted day. And supporters might even be found, it is feared, for the theory that, in certain other respects, he was not unprophetic.

Thus ' he was very artful,' says Freind—and it is a well-documented statement—'in laying baits for the Delicate, for the Ladies, for the Rich; for the former he has such a tenderness that he condescends to instruct them even in Perfumes and washes; especially some to dye their hair; and such a respect for the latter that he is always studying to invent some of the most select and dearest medicine for them; and if there is a very good thing indeed, he orders twice the

quantity for them as he does for the poor.' John is always quite frank, indeed, about his pecuniary gains, making a lot of money, he tells us, by dealing in strong waters. And it cannot be said that he was niggardly of financial advice to his less successful fellow-practitioners. Thus, having cured twenty patients of dropsy by the use of spikenard, he proceeds to add that this is a medicine not to be given without payment in advance. And his book contains a section devoted to 'disagreeable diseases which the doctor can seldom make money by.'

As a Court physician, too, he was fortunate in finding himself able to lend the full weight of his medical authority to the ancient belief in the efficacy of the royal touch in certain tubercular diseases of the skin and glands. This was, of course, a very strong and, for many centuries afterwards, an almost universal article of faith, the King's power deriving, it was held, from the unction of his hands during the process of coronation. And it was John's invariable habit when his patients failed to react to his own sovereign remedies for these complaints—the blood of a weasel or the droppings of a dove—to advise an appeal to the reigning monarch. Another of John's customs, based on the assumption that a cuckoo has epilepsy once a month, was to add this bird to the mistletoe and boiled boar's bladder with which he treated his epileptic patients. And since he was also an authority

on cooking in general, he may well have presided over the kitchen preliminaries.

For Dr. Freind, indeed, it is clear that he was altogether far too versatile, and it has to be remembered that in addition he was an oculist, poet and grammarian. But at least his life must have been a full one and not, it may be inferred, without its satisfactions. And if it be true that he suggested to Chaucer the slyer touches in the portrait of his physician—whose attachment to gold will be remembered, and whose 'studie was litel on the bible'—it would hardly seem fair to deny him the honour of having inspired the others; a 'practisour' less than 'parfit,' it is feared, but whose taffeta-lined cloak need not be eyed, perhaps, too censoriously.

II

LINACRE AND HIS FRIENDS

During the century that elapsed between the death of John of Gaddesden and the birth of Linacre, the founder of the Royal College of Physicians, the complexion of English medicine, and indeed medicine in general, had altered very little. In the realm of theory the teaching of the Arabians, salutary at first, had degenerated into finality, and the bias of the age had continued unfavourable to exact observation and experiment. It was true that, upon the Continent, during John's later years, there had been a few public human dissections. But they had not been repeated, although their importance had been realized by at least one man of genius. This was Guy de Chauliac, a graduate of Montpellier—Salerno was already falling upon evil times—and he had continued to plead, throughout his career, for a closer knowledge of anatomy. The foremost surgeon in Europe, he had performed operations for cataract, for the radical cure of hernia or rupture, had introduced the principle of extension in treating fractures of the leg to minimize the danger of subsequent shortening, and the familiar rope above the hospital bed to assist the self-movement

of a patient. He had also had the courage, when assailed by the Black Death—he survived two visitations of this at Avignon—to make a record of his own symptoms in a true scientific spirit. And he had incidentally dismissed, as a mass of fables, the works of Gilbert and John.

But like his contemporary Chaucer in another field, drawing from Nature in to-morrow's medium, he had been little more than a February sun, and the mists of authority had again settled down. Except perhaps in Italy, already responding to an older and more liberal way of thought, man was still a child of sin, waiting for judgment in a setting of relative unimportance, and much more concerned, as far as his scholars went, with preparing his brief than examining his prison.

Scholarship apart, however, and in the material sense, the world was expanding on every side. Venice had found China. The empty Atlantic had yielded up Madeira and the Canary Islands. And Portuguese sailors were, year by year, pushing farther south down the west coast of Africa. In spite of the Black Death, too, and an almost continuous succession of wars, England was playing its part in this general movement. Its wool growers and cloth merchants were finding fresh markets; iron-works were flourishing in Gloucestershire and Sussex; the great commercial companies were entrenching themselves with political and finan

cial power; the three-hundred-ton vessels of John of Gaddesden's Thames had long ago been dwarfed by the monsters of the Bristol Cannynges; and a Lord Mayor of London had entertained at his table no less than four reigning monarchs.

Such was the England into which Linacre was born, probably at Canterbury, in the year 1460—an England as little affected in its everyday life by the Wars of the Roses flickering up and down the country as his own quiet lessons at the Archbishop's School, under the shadow of the cathedral. Of his parents nothing is known, though a brother and two sisters are mentioned in his will. But he was certainly fortunate in having for a friend, both as a schoolboy and later, the learned Prior, some say his kinsman, of the Christchurch Benedictines. This was William Tilly of Selling near Hythe—Prior Selling as he was familiarly called—a Kentish gentleman of private means, who had been to Oxford in his early days. And for such a boy as Linacre it would have been difficult to find a more appropriate guide. For he was not only a good administrator—providing a series of studies for the more scholarly of the brethren, adorning the library over the Prior's chapel with some very beautiful carving, and chiefly responsible for the completion of the great central tower of the cathedral—but one of the few men in England who had realized the importance of the forgotten Greek world just come to life in Italy.

This had been the result of a visit there as a young man, when every scholar with whom he had come into contact had been engrossed with the manuscripts hurried out of Constantinople before its capture by the Turks. Even then, as Selling had perceived, these were beginning to alter the thought of Europe. And he had not only contrived to bring a few of them home with him but to learn something of the language in which they had been written. In this it has been said, rather improbably, that he was helped by the famous Politian. But he seems to have become acquainted with him, perhaps as a correspondent, at a somewhat later date. In any case, it was from the Prior that Linacre learnt his first Greek, and it was thanks to his advice and possibly his assistance that, at the age of twenty, he went up to Canterbury Hall, afterwards to be incorporated into Christchurch, Oxford.

Why he should have delayed so long is again unknown—perhaps because Selling was reluctant to part with him—but he quickly made friends with a couple of scholars as earnest as himself in exploring the new learning. These were Grocyn, then a man of thirty-six, and William Latimer, a lad of his own age, and they may have had a common teacher in the Italian, Vitelli, the first to lecture on Greek at the University. It was at any rate Greek—the key to the buried treasure—that became the chief subject of their study. And it

was possibly his knowledge of it that, in 1484, earned Linacre his fellowship at All Souls.

He was now twenty-four, and if his portraits are to be believed, of a somewhat serious cast of countenance, but evidently a youth of considerable attraction, as the following year was to prove. For Prior Selling, who had been chosen by Henry VII. to conduct a mission to the Vatican—where he ultimately delivered, we are told, an oration in Latin before Innocent VIII. and his assembled cardinals—had no hesitation in asking Linacre if he would care to accompany the party. To such an invitation at such a time there could only have been one answer. And within a few weeks, and by what must have seemed to him a rather breathless transition, he had travelled to Italy with the embassy, said good-bye to it at Bologna, and was not only in Florence but at the court of Lorenzo the Magnificent and sharing their lessons with his two sons.

How this had come about can only be guessed. But probably in part it was due to Politian, older in years if not, alas, in righteousness, to whom the Prior had given him an introduction. For the graceless poet was still the boys' tutor, though no longer a resident one, thanks to their mother, who may well have discerned in the grave young Englishman a not unwelcome ally. But at any rate he was there, in the heart of a Florence almost at the zenith of its splendour, with Savonarola still but a cloud, or scarcely that, on

its horizon; with Filippino Lippi at work on his frescoes, and Botticelli, perhaps, just back from Rome; with the young Michael Angelo beginning to dream dreams, his eyes already on Ghirlandaio's workshop, and Ghirlandaio himself painting in the church of Santa Maria Novella. It would have been pleasant to have had a picture, indeed, of this year at Florence, though possibly its painters left him untouched. But it can at least be assumed that, under the wing of Politian, talking a Latin, it was said, that might have been learned in heaven, and immersed in Greek with his rival Chalchondylas, he was familiar with most of its scholars—with della Mirandola, for instance, the darling of the gods, fresh from his wanderings 'over the crooked hills of pleasure,' and old Ficino, the father of them all, his life-work on Plato now behind him, but coming in from his farm to discuss with Lorenzo the publication of his new *Plotinus*.

Attracted as he must have been, however, by the high thinking, if not by the luxury, surrounding him in Florence, it was probably at Rome, and in the company of Hermolaus Barbarus, that his own future began to define itself. If anything can be deduced, indeed, from a certain similarity between what Linacre became and the Barbarus who befriended him in Rome, it was this great scholar who was the most powerful of the influences exercised upon him in Italy. And the traditional account of their

meeting is at least congruous with the characters of both.

According to this, it was in the Vatican library, where Linacre was poring over a Greek manuscript, that Barbarus introduced himself with the smiling remark that his own surname could scarcely be applicable to him. From the young Venetian aristocrat, who had already, at thirty-one, translated Themistius, Dioscorides and Aristotle, such a gesture must have been irresistible. And from the description of his régime that has come down to us, after he had accepted a patriarchate from Innocent VIII., it is not very difficult to imagine the circle into which Linacre was now drawn. Thus, having remained a bachelor—as Linacre himself was to do—he rose every day, we are told, at eight, and punctually at nine, having refreshed himself, attended divine service. From ten to three he studied, each day of the week being allotted to its own subject. At three he lunched upon a soft egg, figs, fresh almonds, bread and wine, amusing himself thereafter, conducting his necessary business, or conversing with his friends till eight o'clock. Supper was then laid, consisting of a dish of eggs, a salad of herbs, and perhaps a young roasted crane, the day being rounded off with an hour or two in the garden, studying his plants, or in learned argument.

Originally a diplomat in the service of his State, and possibly still so when Linacre met him, he had infringed

one of its laws in accepting office from the Pope, and was consequently an exile for the rest of his life. But in such a fashion and acknowledging, as he said, only two masters—Christ and letters—he appears to have borne this with equanimity. And as the translator of Dioscorides' *Materia Medica*, and perhaps his guide to the works of Galen, it was probably Hermolaus who suggested or confirmed Linacre's choice of a profession. It was probably Hermolaus, too, when Linacre left for Venice, who commended him to Aldus the printer. And it was for Aldus that Linacre began to undertake an original translation from the Greek. This was of Proclus on the Sphere, and was afterwards said—Linacre finished it at Oxford—to have been the first accurate translation from the Greek ever made in England.

For some time, however, Linacre seems to have laid it aside—perhaps owing to his increasing absorption in medicine—and although it was ultimately issued from the famous Aldine Press, this was not until a dozen years later. Meanwhile he had left Venice for what had long become its university town of Padua —the shrine of Aristotle, as Renan described it—and it was from the medical school there, by then the first in Europe, that he eventually took his doctor's degree. How long he was working for it we do not know. He was probably in Italy some six years in all. But the disputation, we are told, after which it was con-

ferred, was one of exceptional ability, and it was on his way home that he met at Vicenza the last great figure of his Italian sojourn. Appropriately enough, this was old Nicholas Leonicenus—he was then over seventy and lived to be ninety-six—who had already been lecturing on medicine for nearly half a century, and who had been one of the first, as a Greek student, to inveigh against the inaccuracies of the Arabs. He had also begun to translate into academic Latin—a work that Linacre was to continue—some of the writings of Hippocrates and Galen from the now available earlier manuscripts. Owing his long life, he said, to the 'innocency of his customs, the tranquillity of his soul, and the frugality of his diet,' he was clearly a member of the spiritual brotherhood to which Linacre had been born and into which Hermolaus had led him. And it was with the old man's words in his ears, and his example before him, that Linacre left Italy. Thanks to good fortune, but evidently not a little to his own personal qualities, he had not only been brought into touch with most of its scholars but every aspect of its creative life. And if he had been less moved, perhaps, by its poetry, he had been sufficiently so, according to the legend, to turn aside for a moment, before the mountains shut him away from it, and build a little cairn to his '*sancta mater studiorum*.'

He was now over thirty, and even to Linacre, after the opulent life that he had been sharing, the atmos-

phere of Oxford, at any rate at first, must have seemed a trifle provincial. But Grocyn and Latimer, who had followed him to Italy and returned before him, were there to welcome him, Grocyn in rooms that he was renting at Exeter and Latimer now a Fellow of All Souls. Moreover it was a great year, with the Moors in the South finally driven out of Spain, and Columbus in the West landing from his *Sancta Maria* on an island in the Bahamas. And even in England something was being felt of the spiritual counterpart to this enlargement. In the words of Erasmus, then in Paris, the world was beginning to wake out of a long deep sleep. And by the younger generation of students at Oxford —Tunstall at Balliol, the future Bishop of London, Thomas More at Canterbury Hall, and the wealthy young Colet, afterwards Dean of St. Paul's—Linacre and his friends, a little to their surprise perhaps, found themselves being regarded as leaders.

For one thing, they knew Greek better than anybody else in England; they had talked face to face with the prophets; and with the death of so many of these during the next few years—Barbarus, Mirandola and Politian—their authority naturally increased. It was probably the demand, indeed, of the 'young entry'—their hunger for the language of the golden age—that kept Linacre in Oxford for so long and made the practice of his profession so incidental. As Erasmus said, there were only three men in England,

Linacre being one of them, who were able to teach Greek. And something of the pressure that was probably being exerted upon him can be gathered from this statement.

That was in 1497 when, hard up as usual, Erasmus had just arrived at Oxford, and for him at least, even if Linacre made no use of them, college life seems to have had its compensations. In the hunting field, as he wrote, he could make a show. He was a fair horseman and understood how to make his way. And the English girls—but it is his best-known letter—were divinely pretty, and with the happiest of customs. Hunting and kissing apart, however, Oxford delighted him. 'The air is soft,' he wrote, 'and delicious. The men are sensible and intelligent. Many of them are learned and not superficially either. They know their classics and so accurately that I have lost little in not going to Italy. When Colet speaks I might be listening to Plato. Linacre is as deep and acute a thinker as I have ever met with. Grocyn is a mine of knowledge, and Nature never formed a sweeter and happier disposition than that of Thomas More.'

From the thirty-year-old genius, with his omnivorous mind, it was an agreeable tribute to the Oxford of the day—with Grocyn and Linacre lecturing on Greek, Linacre still busy, too, with his 'Proclus,' and Colet electrifying the University with St. Paul's epistles in their original tongue. But it seems pretty clear that

Erasmus at this time—later it was not so, as we know from another letter—did not regard Linacre, at any rate primarily, as a practising physician. On the other hand, it is obvious that amongst his friends, already beginning to rise in the service of the State, his medical reputation must have been a high one, even before he settled in London. And when, three years later, Henry VII.'s eldest son, the unfortunate Prince Arthur, was sent up to Magdalen, it was upon Linacre that the choice fell of becoming his tutor and private physician.

For such a man as Linacre, with his heart in his books, and already deep in the early Greek medicine, it was hardly an honour, perhaps, to have been sought. And as he probably foresaw, it was to take him into a new world. For the boy was delicate. He was about, far too early, to make a diplomatic marriage with a foreign princess. And it meant that his physician would necessarily have to accompany him to his own and his father's court. It meant the end of Oxford, in fact—his definite committal to the practical side of his profession. And within a couple of years, the Prince having died five months after his marriage to Catherine of Aragon, Linacre was in London and certainly the most erudite of its general practitioners.

Whether he was equally good as a clinician there are no records to inform us, and his own medical writings were confined to his translations of the works

of Galen. But the fact that his patients seem to have included almost every statesman of his time, men such as Wolsey, Archbishop Warham, Tunstall, Fox and More, and that in 1509 he became physician to Henry VIII. at a salary, in present money, of £700 a year, seems to argue a practical ability not far short of his learning. Although he had left Oxford too, he had not lost touch with the friends of his youth, Grocyn and Latimer, though the latter remained, perhaps a little to his envy, almost exclusively the scholar. It was true that for a short time he shepherded the studies of Reginald Pole, a future archbishop, and that he helped Erasmus with the second edition of his world-shaking version of the New Testament. But he steadily refused, in spite of his friends, to publish anything of his own, and seems to have been quite content, in his later years, to remain an obscure country priest.

But Grocyn, on the other hand, was often in London, where he was now rector of St. Lawrence Jewry. Colet, the inheritor of his father's fortune, was Dean of St. Paul's and establishing his new school. Thomas More, married and living in Bucklersbury, was earning a large income at the Bar. Erasmus was still an occasional visitor, not to say borrower, at the houses of them all. And both at Court—the most learned of its time—and at Linacre's home at Knightrider Street, the talk must have been much the same,

mellowed by age and experience, as in the old days at Oxford.

With Colet alone were his relations to change, the point at issue being a Latin grammar, which Colet had invited Linacre to compose for the use of the boys at his school. But Linacre obviously lacked, as was to be proved again later, the art of appealing to the young beginner. And Colet was obliged, probably rightly, to use a simpler alternative of his own and Lily's. Evidently Linacre was hurt, however—it was perhaps a little characteristic that his only known quarrel should have been about a Latin grammar—and in spite of the efforts of Erasmus and other would-be mediators, he appears to have refused a reconciliation. In so quiet-tempered a life it is a curious incident—there may have been others, of course, unrecorded—but it may be taken as evidence, perhaps, of a certain force of character that must have been there to account for his achievements. And Colet was not the sort of man, especially if he believed himself to be right, to make any concessions at the expense of truth. But the quarrel, if it amounted to that, had no further consequences, and it was Linacre's genius for friendship that enabled him to render what was to prove, in the long run, his greatest service to English medicine.

This was the establishment in 1518 of the Royal College of Physicians, and its official recognition, thanks to Linacre's influence with Henry VIII. and

Cardinal Wolsey, as an examining body with powers to demand a certain standard of efficiency. Assembling at first in Linacre's house—the Stone House, as it was called, in Knightrider Street—it consisted under his presidency of six doctors, two of whom were also in Court employment. These were John Chambre and Fernandus de Victoria, the former like Linacre an M.D. of Padua, the others being Nicholas Halsewell, a Fellow of All Souls, John Francis and Robert Yaxley. And it was enacted that, without their approval, after examination, no one, who was not a graduate of Oxford or Cambridge, should be allowed to practise physic in the City of London or within a seven-mile radius. This conformed with the privilege in respect of surgery granted, six years before, to the Company of Barbers and Surgeons. And five years later, the jurisdiction of the College was extended to the rest of England. It was bitterly opposed, of course, by many of the bishops, who had previously held the right of sanction in their own dioceses. But from the point of view of the profession, as well as the country, it was a far-sighted piece of legislation. For it not only freed medicine, at any rate officially, from ecclesiastical control, but it brought into being a body of men regularly meeting to exchange ideas, and able in some degree to prevent the dishonest exploitation of the public.

Meanwhile there had been showered upon him, after the custom of the age, and although he did not

become a priest until a couple of years later, a series of benefices in various parts of the country, probably disposed of in the usual way. Thus, by the time he was fifty-eight, in the birth-year of the College of Physicians, he had been rector of Mersham and Hawkhurst in Kent, a prebendary of Wells and a canon and prebendary of St. Stephen's, Westminster. In the same year he became a prebendary of York and the rector of Holsworthy in Devon. And it was not until he was sixty, when he received the livings of Wigan in Lancashire and Freshwater in the Isle of Wight, that he decided to take Holy Orders.

Why he should have done so then is not very clear. But he may have thought it appropriate to his years, to the fact that his health had begun to decline, and that he was about to retire from active practice. Moreover he was now deep in what, to his immediate successors, loomed as the greatest of his achievements —his restorations of Galen, from the original Greek, into an even more brilliant and flexible Latin. Compared with these, the little gatherings in Knightrider Street must have seemed of a very secondary importance. And if their immediate effect was to make the Greek physician an even more dominating figure—to invest the most casual of his remarks with an almost Biblical sanctity—this was perhaps inevitable, and indeed a tribute to Linacre's literary skill. For here was the Master as he had really spoken, and as nobody had

heard him for a thousand years, face to face with Nature, dissecting, exploring, and lucidly demonstrating his results. And it was naturally more respectful, and considerably easier, to sit at his feet than follow his example.

But it was preparatory work of a high order, and considering the circumstances in which it was undertaken—at the failing end of a busy life—an amazing example of endurance. Troubled with the beginnings of a fatal disease, still at the beck and call of his more intimate friends, even for a short time, at the age of sixty-three, physician and tutor to the little Princess Mary, the whole of his books, with the exception of his youthful Proclus, were produced in the last seven years of his life. Taken in order they were Galen's *De Sanitate Tuenda*, published in Paris and dedicated to Henry VIII., and the *Methodus Medendi*, also published in Paris and also, and by command, dedicated to the King. Both these translations were seen through the Press before he had retired from practice, and each of them passed through many editions, especially on the Continent.

Of the first-fruits of his leisure, if such it could be called, he dedicated Galen's *De Temperamentis* to Pope Leo X.—the Giovanni de Medici with whom, so long ago, he had shared the ministrations of Politian—and it is interesting as being one of the first books to be printed at Cambridge at the house of the German,

John Siberch. Two years later, he brought out Galen's 'Natural Functions,' dedicated to his friend Archbishop Warham, and 'Galen on the Pulse,' dedicated to Cardinal Wolsey, still at the height of his power. These were afterwards included in one volume with a translation by Nicholas Leonicenus of 'Galen on the Muscles.' And it was in this year that he prepared a Latin Grammar for his small pupil at the Palace. Probably this was the same, revised and brought up to date, as he had written for Colet's boys at St. Paul's. And it seems to have confronted the Queen and Ludovic Vives—the child's other tutor—with a similar problem. In fact, very tactfully, it had to be shelved, Ludovic Vives preparing another, 'with a great deference to the Preceptor of the young Princess, Dr. Thomas Linacre.' It seems in France, however, where it was translated by George Buchanan, to have found a more appreciative public. And it was chiefly upon the Continent that there was to be a welcome for its much more detailed successor.

This was probably the dearest to him of all his labours, *De Emendata Structura Latini Sermonis*. And for many years it survived as a standard book, praised by Melancthon and referred to by Milton. Indeed, if the 'high man' of Browning's *Grammarian's Funeral* was Linacre himself, as has been suggested, this would have been the work for which he ignored the world and the 'throttling grasp' of death. But his infirmities

were growing. Buried amongst his books, his friends complained that he was neglecting them. And those whom he would have welcomed, the friends of his youth, were already passing beyond his reach. More he may have seen sometimes—now Sir Thomas, living at Chelsea and one of the King's treasurers—and Cuthbert Tunstall, Bishop of London, Keeper of the Privy Seal and a trusted ambassador. But they were busy men under a clouding sky. Erasmus was at Basle reaping the whirlwind of Luther. And Grocyn was dead, and Latimer hardly less so, tending the flowers of his country garden.

With his grammar finished, therefore, and his affairs in order—the house in Knightrider Street left to the College, and a sufficient income from the rest of his property to provide lectureships at the universities—he may well have thought, in the autumn of 1524, that it was about time for him to be going. In the background of his age he had led a full life. Most of its statesmen had been his friends. And if there is just a hint, perhaps, to be found in his will of the Linacre trespassed upon by Colet—if he had somehow detected in his niece Agnes a certain tendency to *laesa majestas*—it was only by the gentlest of posthumous rebukes that she and the world were to discover it. Her sister Margaret, he said, was to have the better of the two beds that he had bequeathed them.

III

WILLIAM HARVEY

Between the professional careers of Linacre and Harvey there are several curious resemblances. Both were born in Kent, Harvey at Folkestone some fifty years after Linacre's death. Both were educated at Canterbury, Harvey at what had then become the King's School, and took their first medical degrees at Padua with an equal distinction. Harvey like Linacre, although he married at twenty-four, was destined to remain childless, acquired wealth as the result of an aristocratic London practice, became a Court physician to two monarchs, and could if he had wished—he declined on the grounds of age—have been President of the Royal College of Physicians.

But there, and in the generosity with which they spent their earnings, the likeness between them ends. In his approach to his art Linacre was essentially a scholar, the interpreter rather than the critic of the masters he translated, and even the founder, though perhaps unconsciously, of a school that would have considered such criticism an act of sacrilege. Indeed, an unfortunate doctor, not long after Linacre's death, who had ventured to doubt certain of Galen's dicta,

had been solemnly haled before the College of Physicians and compelled to sign a recantation. Harvey, on the other hand, though a sufficiently good Latinist, was from the beginning chiefly an experimenter—hunting down 'Truth in Truth's own book,' as Abraham Cowley was to write of him later. And in so far as he owned any particular classical allegiance, it was rather to Aristotle than Galen. But it was by virtue of a readiness that they would have applauded, to submit them both to the test of Nature—to discard either if his own quick eye and deliberate brain bade him do so—that he was ultimately to make, in the circulation of the blood, one of the greatest single discoveries in the history of medicine.

Physically, too, with his diminutive frame, his round black eyes and choleric tongue, he would seem in most respects to have been the antithesis of his gentler predecessor. And at an age when Linacre was contemplating the priesthood and withdrawing more and more deeply into his books, Harvey was riding about Europe—that 'little perpetual movement,' as the Earl of Arundel affectionately called him—scouring its forests, regardless of bandits, for biological or botanical specimens, demonstrating his discovery of the circulation to a sceptical professor at Nuremberg, hunting with the Emperor in Austria, sleeping in the straw of wayside inns, dining with the English College at Rome, and buying pictures for Charles I.

That was several years after his achievement had been published. But it was an evidence of the spirit in which it had been undertaken, and for which at least to some extent he must have been indebted to that of the moment in which he was born. This was to young and happily-mated parents in the twentieth year of Elizabeth's reign, with Drake in the *Pelican* three and a half months at sea on the first English voyage round the world, Hawkins at work, not wholly to his own disadvantage, upon the navy that was to discomfort Spain, Gilbert at Limehouse brooding over his plans for future overseas colonies, Frobisher on the verge of sailing from Harwich upon the third of his Arctic explorations, Sidney at Court, beloved of the Queen and already encouraging perhaps, by his friendship, Spenser's muse 'out of the floor to sing his sweet delight in lowly lays,' Bacon reading for the Bar, but for the moment in France, Shakespeare and Marlowe boys of fourteen—and something of what they stood for can hardly have failed to find its way across the Harveys' threshold.

It was true that Folkestone itself, with its little stade or sea-front, its three or four trading vessels and less than two hundred houses, was rather overshadowed by its neighbour Dover, though it shared some of its privileges. But thanks to its quarries and its fishing fleet, it was contriving to maintain a modest prosperity —a prosperity that the Harveys, both of sound,

yeoman stock, were already beginning to share—and from which the defeat of the Armada, when William was ten years old, removed the darkest immediate menace. By then he had become the eldest of a family of five, a sister and three brothers, John, Thomas and Daniel, to whom three more, Eliab, Michael and Matthew, had been added by the time he was fifteen. And it was a household that might well have been taken, at a later day, as typical of the age that produced it.

Loved and revered by his 'week of sons,' to borrow the phrase of an old historian, their father was destined, in due course, to become mayor of Folkestone. William, in his own realm, was to be as great an explorer as any of the captains of his youth. His next brother John, from a minor appointment at Court, was to become Receiver for Lincolnshire and Keeper of Sandgate Castle. The five younger ones, with their headquarters in London, were all to make fortunes as merchant adventurers. A son of John's was to be member for Hythe, a son of Daniel's ambassador to Constantinople. His daughter Elizabeth was to marry the first Earl of Nottingham and become an ancestress to the Earls of Winchilsea and Aylesford. And a descendant of Eliab, an admiral of the Blue, was to command the *Téméraire* at Trafalgar.

To the fifteen-year-old schoolboy, however, just home from Canterbury, all this was still an unwritten book, although his own future, with Cambridge ahead,

had already begun, perhaps, to define itself. And in 1593 he entered the college, founded some forty years earlier by Dr. John Caius—the eccentric old bachelor who had been, since the death of Linacre, the most considerable figure in English medicine. Later—he had been dead now for twenty years—he had come to doubt the wisdom of his benefactions, and even to regret, perhaps, the part he had played as a whole-hearted supporter of the new learning. For there had appeared in its wake various unexpected and wholly deplorable tendencies. And he had lived to discern, as Englishmen have occasionally done since, a perilous laxity in the youth about him.

With the vanishing from the universities, as the result of Protestantism, of their once quiet and monastic character, there had been an alarming access of irreverence and general unseemliness of conduct. Men of a new order, he had grumbled, were taking the places of the undergraduates he remembered—the studious poor, short-haired and long-gowned, of his own and Linacre's day. And a similar slackening of the nation's fibre was everywhere observable in its homes. Even the children—and as physician to Edward VI., Mary, and Elizabeth in her younger days, an extensive practice had given him every opportunity to judge—were being 'so brought up that if they be not all day by the fire with a toast and butter and in their furs they be straight sick'; an opinion upon which it would

have been interesting, when these children had grown up, to have heard the views of Spain.

But if Caius had died in the arms of authority, looking back rather than forward—and as far as medicine was concerned, even with Harvey on the horizon, his conservative soul need not have been over-anxious—he had at least been the means of commending to his fellow-physicians a closer acquaintance with the human frame. This had been partly due to an early friendship, first as a student and later as a professor, with the famous anatomist, Andreas Vesalius, in whose house he had lodged while at Padua University. And his demonstrations—probably the best that had been given in England—had been made possible by the privilege granted by Henry VIII. to the Barbers and Surgeons of annually dissecting four dead malefactors. It was true that their chief object had been to display to a worshipping profession the 'hidden treasures of Galen.' But he had at any rate led his audiences to the fountain-head, if only to observe how the Master had drunk from it. And it is impossible to believe that he could have been other than content that his college should have welcomed Harvey, and that his young successor, having taken his B.A., should have followed his example in going to Padua.

That was probably, though the date is not quite certain, at or just before the turn of the century. And even to Caius its standard of luxury could

scarcely have seemed exaggeratedly high. The food was bad. The windows of the students' quarters consisted for the most part of sheets of linen. Artificial light was a rare amenity. And there was very little amusement for leisure hours. But the teaching was of a high order. Galileo, experimenting with his first thermometer, was lecturing to a large and enthusiastic following. And in the sixty-year-old Fabricius ab Aquapendente, it possessed the leading anatomist of the time. Indeed, it was in anatomy and surgery rather than medicine that the progress of the age was being principally reflected—an age in which the theories of Copernicus, latent for fifty years but germinating afresh in Kepler and Galileo, and the cartography of Mercator, who had only just died, were building a new heaven and a new earth. And it is a sufficient comment upon medicine's relative inertia that, at such a period, it should have been considered worth while to print and publish again John of Gaddesden's *Rosa* and the *Compendium* of Gilbert.

In surgery, on the other hand, thanks possibly to the fact that anatomy and surgery were largely in the same hands, there had been several notable advances. Ambroise Paré, who had died while Harvey was at school—it had been laughingly said of him that the kings of France bequeathed him to their successors as a legacy of the crown—had shown that the ligature of blood-vessels during an amputation rendered the red-

hot cautery an unnecessary torture. His pupil Guillemeau—careful, however, to quote Hippocrates—had demonstrated the value, in certain cases, of inducing artificial labour. And the forgotten practice of Caesarean section—the surgical delivery of a child where disease or deformity made a natural birth impossible—had been revived with considerable success. In anatomy, too, bestridden as it was by the resuscitated Greeks, a new and independent spirit of observation had begun to justify itself by results. Vesalius had shown, fifty years before, that in detail, at any rate, Galen could err. And Leonardo da Vinci, approaching the subject from another angle, had already come to the same conclusion. He had proved that there was no direct entry, for instance, as Galen had taught, of air from the lungs into the heart. And though he had never published them, there must have been many to whom his experiments had been known.

With the text-book of Vesalius, therefore, on th 'Fabric of the Human Body,' for its anatomical gospel —a book that has been described as the first scientific treatise, in the modern sense, on any subject; with the University itself, thanks to its constitution, more amenable than some to the influence of youth—readier, in any case, than most to welcome young men from Protestant England; and with Fabricius, in the chair of Anatomy, the peer of at least two of his brilliant predecessors, Harvey was to find himself in the van

of all that was progressive in his chosen career. And he seems to have adapted himself, from the first, both to his companions and his opportunities. In the community of students, divided into 'nations,' he was elected as a representative of his country. And with the old Fabricius, lecturing in the candle-lit theatre that he had himself presented to the University—and still to be seen much as he left it—he became a trusted and intimate friend. Throughout his life, indeed, in spite of his quick tongue, there was a deep-seated grace in his attitude to others, a trifle more upon the throne, perhaps, as he grew older, but never really absent from his dealings with them. And there was never any doubt, from the point of view of his work, of his ultimate success. When he took his M.D., at the age of twenty-four, 'he had shown such skill, memory and learning that he had far surpassed,' it was said, 'even the great hopes which his examiners had formed of him.'

Important to himself, however, as was the taking of the degree, infinitely more so to medicine as a whole was the fact that he had already begun, working with old Fabricius, to lay the foundation of his great discovery—not to be understood, however, without a certain knowledge of the conceptions with which he was faced. These were principally, of course, derived from Galen, who had died in the year 200, but whose general view of the human economy had dominated

medicine ever since. With its basic assumption, too, of an omnipotent God, of whose perfection the body was a mirror, it had made an impressive appeal, pagan though its author was, not only to Christian but Mahomedan theology. And since the Renaissance, thanks to a hundred translators ranging from Linacre to Rabelais, it had come to be regarded, backed by the Church, as little less than a Divine pronouncement.

Thus—and it has to be remembered that many of Galen's observations had been astonishingly exact—he held that the principle of life, one with the World Spirit outside, was drawn into the body by the act of breathing; and that it entered the blood made, as he believed, in the liver out of food-stuffs brought to it from the intestines. From the liver, where it was endowed with what he described as 'natural spirit,' the blood was then conducted, he taught, by a vein to the right side of the heart. And thence, some of its impurities having passed to the lungs, it ebbed to and fro, nourishing the whole frame. A certain portion of it, however, passed through what we now know to be an impervious wall into the left side of the heart. And here, mixing with the air, to which this side of the heart had access, it received its measure of the 'vital spirit.' This superior blood then ebbed to and fro in what he had recognized as the arteries, and enabled the various organs of the body to perform their particular functions. And it was a part of this blood,

reaching the brain, that encountered the highest spirit of all. This was the 'animal spirit'—contrary to Aristotle, Galen had accepted the brain as being the instrument of intelligence—and thus enriched, it flowed down the nerves with the gifts of motion and sensibility.

Such was the theory, in some ways so near the truth, but so paralysing to progress owing to its anatomical errors, that the dark-eyed, curly-headed little Englishman was destined to relegate to the museum. And so complete did it seem that as details, undiscovered by Galen, came to light, it had generally been contrived, even where they seemed a little contradictory, to incorporate them into Galen's scheme. A hundred years before, for instance, a French anatomist, Jacques Dubois or Jacobus Sylvius, had discovered that the larger veins contained valves. And a generation afterwards the theologian, Michael Servetus, whom Calvin burned at the stake, had suggested that the partition between the two sides of the heart was not really pervious to the passage of blood. In later life, though with sundry reservations, Vesalius had come to the same conclusion. And a possible blood-route from the right side of the heart through the lungs and thence to the left side had been demonstrated by his pupil Columbus and yet another anatomist, Cesalpinus.

Harvey's teacher Fabricius, however, although he had re-discovered—or studied more closely—the valves

found by Sylvius, still held to the permeability of the middle partition of the heart. And although he had shown that the valves in the veins were all directed heart-wards, he had regarded them as pockets designed to catch blood which would otherwise have collected in the extremities. It was a plausible explanation. It was consistent with the ebb and flow theory. It even added honour to the prescience of Galen. And it was delivered with all the authority of one of the most experienced and best-beloved professors in Europe. But it had one tiny and, as it seemed to Harvey, inexplicable flaw. For he had noticed that the ascending veins—those leading to the head—also had their valves set towards the heart.

It was the smallest of obstacles—a few flimsy bits of tissue to pit against a fourteen-hundred-year-old philosophy. But there they were, precisely like the others, obviously not doing what Fabricius had supposed. And there they remained, annoyingly at the back of his mind, although he had returned to England and fallen in love. This was with Elizabeth Browne, the daughter of one of the Queen's physicians, whom he married a couple of years after his return from Italy. And the rest of his research has therefore to be envisaged against the beginnings of a London practice being slowly built up by a young man of twenty-six from a house in the parish of St. Martin-extra-Ludgate.

For this he had taken his doctor's degree at Cam-

bridge and become what would now be called a member of the Royal College of Physicians. And at the age of thirty-one, having been advanced to a Fellow, he was appointed an Assistant Physician to St. Bartholomew's Hospital. This had been chiefly the result, no doubt, of his own merits. But a royal testimonial had perhaps helped a little. And it seems possible to discern in this a characteristic touch of the now re-assembled band of brothers. For with the death of their mother—the 'comfortable frendly matron, the cheerful quiet neighbour' of her Folkestone memorial—their father had come to Hackney, whence from time to time he advised his boys about their investments. And Thomas, Daniel and Eliab, with the twins now old enough to be apprentices, were already upon the road to solid establishment in the new trade with Turkey.

But John was at Court as a 'footman' to James I., with his eyes on the Bar as an avenue of promotion. And if a line from his master would help the good cause, he could probably have been depended upon to obtain it. Harvey's own wife, too, though her father was dead, may have been able to exert some professional influence. But of Harvey's wife, although there is an affectionately-toned reference in one of his later writings to her favourite parrot, nothing is known save that she brought him no children, though several others were her pensioners, and that his brother John

left her a hundred pounds. It may perhaps be deduced, therefore, assuming no news to have been good news, that their domestic life was a contented one; that she developed the qualities appropriate to a husband who spent most of his spare time dissecting animals; and that it was a certain relief to her that there were six able brothers to keep an eye on his worldly affairs.

Not that he was unable to look after himself. They had the deepest respect for his genius. But he was perhaps a little careless about his personal advancement, and even more so with regard to his earnings. And meanwhile for Harvey himself there was the intriguing problem of those still unexplained valves, concerning the solution of which (and such problems in general) a rather stimulating book had just been published. This was by a future patient of his, Francis Bacon—it had come out in 1605 and been called *The Advancement of Learning*—and having stated with truth that it was 'the nature of man (to the extreme prejudice of knowledge) to delight in the spacious liberty of generalities and not in the enclosures of particularity,' it had proceeded to suggest that 'all true and fruitful Natural Philosophy hath a double scale or ladder . . . ascending from experiments to the invention of causes and descending from causes to the invention of new experiments.'

These were the lines, then, upon which Harvey went to work, whether or not as the result of reading

the book. And during the fourteen years of his investigation, he dissected no less than eighty species of animal. Finally he concluded that the valves in the veins could serve but one possible end—the enabling of blood to return to the heart and the prevention of its flow in an opposite direction. But the great arteries, though only at their beginnings, were also fitted with valves, and these were so arranged as to secure a precisely opposite result. The blood in the arteries, that was to say, could only move away from the heart and never towards it, and there were valves in the heart itself that brooked of no other explanation. Into its right side—and it was clear that the septum in the middle was impervious—nothing but venous blood could arrive, to be thence expelled into the lungs. And into the left nothing could be admitted but blood from the lungs, to be despatched into the body. The ebb and flow theory was therefore untenable. But to the solution that was slowly being forced upon him there was the very crucial objection that, between the ends of the smallest arteries and the beginnings of the smallest veins, there was no naked-eye connection. And the compound microscope had not yet been developed.

From the cause to which his experiments, therefore, had seemed to ascend, he had to descend once more to further experiments, and with infinite patience he set to work upon another line of inquiry. He estimated

the holding capacity of the human blood-vessels and also of the chambers of the heart, and found that the expelling chamber in its left side was able to hold two fluid ounces. But if, at each beat, it were to expel only half of this—a very conservative under-estimate—a normal heart, by the end of ten minutes, would have discharged into the body two or three times as much blood as the whole of its vessels could contain. Then where did it go? Despite that invisible link, there was only one possible answer—the same that the valves had already whispered to him. It could only be going round and round.

Over and over again, by experiment and observation, he tested each step of the road he had travelled, but only to find that they led, and could lead, to no other goal. Since the blood departed, since it arrived, since it could but travel in one direction, some day or other—four years after his death, in fact—the hidden connection would come to light. But that it must be there—he was entering his thirty-ninth year—he was now in a position to demonstrate. And it was in the theatre added, a generation before, to Linacre's old house in Knightrider Street that, in the middle of April 1616, he made the first announcement of his discovery.

This was in his capacity as Lumleian lecturer to the Royal College of Physicians—a lectureship that had been founded thirty-five years before by Lord Lumley

and his friend Dr. Caldwell, and endowed from country estates left by them both to the extent of £40 a year. It was held for life—Harvey had been just appointed—and involved an hour's address twice a week, three-quarters of it to be given in Latin and the remainder in English, 'wherein shall be plainlie declared for those that understand not Latine what was said in Latine.' And the lecturer had 'to dissect openly all the bodie of a man, especiallie the inward parts, for five days together as well before as after dinner, if the body may so last without annoie.' This had been made possible, during the reign of Elizabeth, by an extension to the College of Physicians of the privilege that had been granted to the Barbers and Surgeons, twenty-five years earlier, by Henry VIII. And the lectureship was not incomparable, as regarded rank, with that of a Regius Professor at Oxford or Cambridge.

Harvey could therefore depend upon a considerable proportion of instructed and influential hearers, and it is gratifying to find that, amongst his own colleagues, he met with an instant appreciation. Even so, it was another twelve years before he permitted himself to venture into print. And it was not until 1628 that his book *De Motu Cordis*—a model of concise and cogent reasoning, and one of the few that can properly be called epoch-making—was published at Frankfort. Later, in the discovery by the Italian Malpighi of the vast network of capillaries and venules—the junction

postulated by Harvey, and so triumphantly revealed by the microscope—it was to receive its final justification. But even before that, though it was bitterly assailed, to the actual detriment, it has been said, of his practice, it had been generally accepted for what it was to become—the key to all future physiology. And living as he did through and beyond the Civil War, he was fortunate enough to see that.

Indeed in England, where his views were no longer novel, such hostility as he met was probably less due to his work on the heart than his association with the House of Stuart. And it has to be remembered that, as a clinician, he had always been criticized somewhat freely. Familiar as he had become, riding about on horseback with his man respectfully following on foot, professional heads had never been lacking to shake themselves dubiously over his methods, although, as in Linacre's case, the character of his patients suggests that they must at least have been competent. They had at any rate sufficed, allied with his other qualities, to procure him an appointment to James I. and later the confidence of the unhappy Charles, to whom in due course he became Physician-in-Ordinary. And for many years, doubtless to the quiet satisfaction of his merchant brothers in St. Laurence Pountney, he must have enjoyed one of the wealthiest and most distinguished practices in London.

The personal attacks, therefore, that may have been

made upon him by jealous contemporaries or disgruntled apothecaries, of whom one is reported to have said that he would not give threepence for a prescription by Dr. Harvey, probably did not disturb him very seriously. And he had already begun, being now over fifty, to detach himself from his ordinary routine. For months at a time, indeed, he was absent from London altogether, though another research was beginning to occupy him. And in the year after the publication of *De Motu Cordis*, he was travelling on the Continent with the young Duke of Lennox. He was also in Scotland in 1633 with Charles I., when the latter was crowned at Holyrood. And it is entirely characteristic—his mind being now concerned with the problem of generation and the development of the chick—that he should have seized the opportunity to visit the Bass Rock, with its innumerable sea-birds and sea-birds' nests. In the autumn of the same year, it is true, he was back again in town, drawing up rules for St. Bartholomew's Hospital—incidentally advising, as Caius had recommended to Queen Elizabeth, that surgeons should be forbidden to give 'inward physic.' But a couple of years later, a week after his fifty-eighth birthday, he was setting out with the Earl of Arundel on an eight months' journey through Europe.

As far as Arundel was concerned, the object of this was political, an embassy from Charles I. to the

Emperor Ferdinand. But like his master and many of the post-Elizabethan nobility, Essex, Buckingham and Pembroke, he was an ardent collector of books and pictures. And it became the occasion for various purchases, including a library at Nuremberg, afterwards given to the Royal Society. As for Harvey, it has been suggested that they had become acquainted owing to their mutual interest in the Shropshireman Parr, who had been brought to London for inspection at the alleged age of a hundred and fifty-two. Unhappily he had died there—it was supposed of the London air —but Arundel had been impressed by the little physician. And from the records of their journey, beginning at three in the morning upon a barge at Greenwich, Harvey could scarcely, it would seem, have been leaving his practice upon grounds of impaired vitality.

Thus after spending a couple of days on the North Sea and another four in wagons across Holland, paying a series of state visits at the Hague and nursing a casualty at Leyden, running the gauntlet of the Plague at Wesel, where the inhabitants were dying at the rate of thirty a day, being towed up the Rhine, fringed with the wreckage of the Thirty Years' War still in progress, being shelled at Coblentz by a detachment of artillery and spending a festive three weeks at Vienna, he started from Augsburg on the twenty-third of July, and riding on horseback with one young companion—he

had been detached by Arundel to visit the north of Italy in respect of some pictures to be bought for the King—contrived in ten days to cover a distance of some four hundred and sixty miles. Here for another three weeks, owing to a defect in his passport, he was immured in one room at Treviso, but emerged unimpaired, if a trifle impatient, to discuss art at Venice with Lord Feilding; to be entertained at Florence by the Grand Duke upon 'frute, fowle and wine'; to look in at Rome; and finally, having rejoined Arundel and returned through Germany, to spend Christmas Day and the three succeeding ones knocking about the North Sea again in a storm that made landing impossible.

Afterwards this may well have seemed to him only too symbolic of the England to which he had come back and across which he was marching, in less than three years, and again with Arundel, at the head of an army. This had been gathered, not too wholeheartedly, for the invasion of Scotland under the King. And though Harvey was present as Physician-in-Ordinary, neither then nor through the troubles that followed does he appear to have taken very much interest in the causes at issue. At any rate we find him writing, a few years later, to a Royalist student of his, Charles Scarborough—afterwards physician to Charles II., James II. and William of Orange—begging him to desist, as he puts it, from his 'gunning' and return

to London to start a practice. But he was with the King at Nottingham when he raised his standard against the Parliament—slipping away to Derby to discuss with a local doctor certain diseases of the womb—and it was while he was there that his rooms in London were ransacked by the mob and most of his specimens destroyed.

Sitting under a hedge, too, and reading a book, he was present at the battle of Edgehill—that strange encounter, in which, the day before, an oblivious squire had gone hunting between the armies but had obligingly agreed, on having his position explained to him, to take a hand with his servants. Later, owing to a cannon ball and the fact that he was in charge of the future Charles II. and his brother, Harvey was rather annoyingly obliged to move. But he seems to have played his part in succouring the wounded, of whom it is related that Adrian Scrope, having been left for dead, was afterwards 'recovered by the immortal Dr. Will. Harvey.' But he was probably at his happiest besieged with the King at Oxford, where he lodged at Merton for three years, working at his chicks and going over to Trinity to confer with the Reverend George Bathurst, 'who had a hen,' we are told, 'to hatch eggs in his chambers, which they opened daily to see the progress.' Later, in the absence of the Warden on the Parliamentary side, he was appointed to succeed him. But after the King in disguise had crept over Magdalen

Bridge to his ultimate surrender and death at Whitehall, Harvey returned to London, though never again, it would seem, to a permanent home of his own.

By then he had already survived three of his brothers, John and the twins, Michael and Matthew. And although there is no record of it, the death of his wife must have taken place about this time. But Daniel, who had purchased the Combe estate near Croydon, had a pleasant surburban house at Lambeth. And Eliab, with a mansion in Broad Street, was the owner of property in Essex and also, like Harvey himself, at Roehampton. It was with his brothers, therefore, that Harvey now made his home, a guest in turn at their various houses. And although he had his little ways, such as preferring his sugar in a salt-cellar, an insistence that his meals should be served punctually, a partiality for coffee made in a special pot, which he afterwards bequeathed to Eliab, and an occasional habit, when afflicted with the gout, of sitting on the roof with his feet in cold water, he was clearly as welcome to their wives and families—not to say their servants—as to his brothers themselves.

They seem to have given him, too, every facility for the continuance of his researches, of which his work on generation was perhaps the most important, though it was largely to be superseded, of course, with the coming of the microscope. To the younger colleague, however—afterwards Sir George Ent—with whom,

in his seventy-fourth year, he entrusted the manuscript, it was an occasion never to be forgotten. And he has left a delightful picture of the old man, 'busy with the study of natural things, his countenance cheerful, his mind serene, embracing all within his sphere,' but smilingly refusing 'to quit the peaceful haven where I now pass my life.' But he had still kept in touch with the College of Physicians, by then transferred to a site in Amen Corner, and for which he built and furnished a library and museum, formally opened in 1653. It was the sort of occasion in which Harvey delighted, and having received the President and Fellows, he royally entertained them, made them a speech, and presented them with the title-deeds of the new building. The presidency itself, as has been said, he afterwards refused as being too old. But it was not until he was seventy-eight that he retired from his Lumleian Lectureship, when he bestowed some further property upon the College. That was a few months before his death on June 3rd, 1657, and for some little time—he died at Roehampton—he seems to have lain in state at Eliab's house in Broad Street. Finally, and accompanied, we are told, far beyond the City walls, by a large number of the Fellows of the College, he was taken to Hempstead in Essex, where Eliab had built a family chapel. And he was laid to rest there—he had remembered all the living ones in his will—between two of his little nieces.

In the words of Hobbes, though he had lived to see 'his new doctrine everywhere established,' he had been one of the few that had 'conquered envy'. And his last letter, perhaps, tells us why. It was to a young doctor who had sent him a specimen, and having thanked him for his kindness, since it was in just such deviations from the normal that Nature revealed her 'secret mysteries,' he pointed out that as an explorer his own days, alas, were numbered. But 'it will always,' he wrote, 'be a pleasant sight to see distinguished men like yourself engaged in this honourable arena.' And 'whatever you do,' he added—not a very hard task, surely—'still love yours most respectfully William Harvey.'

IV

SYDENHAM

THERE were two processions on the day of Harvey's funeral, not very similar in outward appearance, but each significant, perhaps, in its own way, of the same underlying national change. In the person of the little doctor there was passing for ever the divine right of the Greeks from the sphere of medicine, in that of Cromwell, going to his second inauguration, the divine right of kings from the realm of politics. Judged by the standard, indeed, of the few, the world of to-day had already dawned. A reduced earth, revolving about the sun, was no longer the centre of a limited universe. Dr. Gilbert, a friend of Harvey's father-in-law, had fifty years earlier shown it to be a magnet. And Robert Boyle, in his laboratory at Oxford, was beginning to weigh the invisible air.

But behind the mentality of its pioneers a country is usually content to linger. And no better illustration of this is to be found than in the episode of the Lancashire witches. This was the result, as afterwards came to light—it had occurred when Harvey was fifty-six—of an imaginative excuse by a small boy to account for an afternoon's truancy. By name Edward Robinson

and the son of a woodcutter on the fringe of Pendle Forest, he explained that while playing he had seen a couple of greyhounds belonging, as he knew, to a neighbouring squire. He had tried to send them after a hare. But refusing to budge, one of them had been transformed into Mother Dickenson, a local old woman, and the other into a boy. Mother Dickenson had then suggested to Edward that he should sell his soul to the devil, and when he declined with commendable courage, she had turned the other boy into a horse. She had then seized Edward and, after a fearsome gallop, conjured him into a barn containing seven other women, where he had been obliged before making his escape to witness a ghastly supper.

It was an England in which logarithms were twenty years old and the word electricity had already been coined. But so plausible had his story seemed that the women had been identified and arrested, and when the Bishop of Chester had arrived to examine them, it was to find three of them dead and another mortally ill. The remainder had then, after a solemn inquiry, been conducted under guard up to London, where a commission of ten midwives, a lecturer on anatomy, and Harvey himself had been appointed to report upon them. And in the opinion of many they had been singularly fortunate in securing an acquittal.

Conditioned as it was, therefore, in the country at large, by such an attitude of the general mind, the

progress of medicine was not likely to err on the side of impetuosity—and it was an attitude shared even by the average physician, still the head of the medical hierarchy. With his usual fee, too, an angel or ten-shilling piece—as Culpeper said, 'physicians of the present day are like Balaam's ass; they will not speak until they see an angel'—the poorer of his patients tended to rely as long as they could upon the less educated surgeons and apothecaries, the former seldom hesitating, in spite of various prohibitions, to administer 'inward physic,' and the latter selling cures founded upon prescriptions that they had either bought or borrowed.

Moreover, during the Civil War and for some years afterwards, there was a considerable relaxation of official standards, and a consequent increase all over the country of irregular or 'quack' practitioners. The very word 'quack,' indeed, had its origin at this time in the givers of 'quack-salber' or quick-silver—the favourite drug of an ingenious group flourishing upon the advent of chemistry, and incidentally the talisman commended by his delightful Aunt Isham to Sir Ralph Verney during the Plague. The Buckingham-shire knight, she wrote, was to 'ware a quill of it . . . soed up in a silke thinge,' and hung round his neck—upon the same principle apparently that the Reverend John Allin, who lived through the Plague at South-wark, advised the permanent sucking of a gold coin,

preferably of Elizabethan mintage, although some of his neighbours, he said, preferred an amulet 'made of the poison of the toad.'

All were remedies that might have come out of the *Leech Book*, Gilbert's *Compendium* or John of Gaddesden's *Rosa*. And with one or two exceptions such as the arrival of quinine, in the dubious shape of Peruvian Bark, the profession itself had very little to show in the way of a changed general armoury. Even in the universities, where an exacter approach was now being made to the study of the human body, there had scarcely been an application as yet of the new methods either to disease or its treatment. And it remained for Sydenham—a subaltern of Roundhead Horse while Harvey was brooding over his eggs at Oxford—to become their apostle, though he affected to despise them, in the great field of bedside medicine.

Whether the two ever met it is impossible to say, though it would be pleasant to believe that they did, since medical history was afterwards to link them as the outstanding figures of the seventeenth century. But the war that to Harvey, with his other preoccupations, had been little more than a nuisance, had meant for Sydenham the devouring crusade in which he had lost his youth and half his family. And between the mellow old Elizabethan, sipping his coffee, and the Puritan soldier just beginning to practise, there may well have been a gulf containing a good deal more

than the forty-six years that separated their ages. To turn from Harvey to Sydenham, indeed, must always in some sort be a turning from the sunshine into the shadow. And the eyes that regard us from his later portraits—unfortunately there are no early ones—have long ago lost, at any rate as regards this world, any illusions that they may once have had. But they are soldierly and direct, slow to anger, and if the heavy-lipped mouth is a trifle grim, it is not without humour and as English as its owner's name and the Dorset-shire manor in which he was born.

This was at Wynford Eagle, a chapelry of Toller Fratrum, once in the possession of the Knights of St. John, and itself a little estate with a recorded history reaching back to Edward the Confessor. It had then, according to Domesday Book, belonged to one Alestan, with 'land to eleven ploughs,' and had since passed from the Norman De Aquilas through various well-known West Country hands. Walronds, Lovels, St. Maurs and Zouches, all had owned it in turn until, in the reign of Henry VIII., it had been bought for forty pounds by Sydenham's great-great-grandfather. As for the Sydenhams, they had been Somersetshire landowners at least since the time of King John, with a Richard Sydenham Judge of the Common Pleas, a Simon Sydenham Bishop of Chichester, a daughter of the Sydenhams of Combe Sydenham the wife of Sir Francis Drake, and a Sir Edward Sydenham presently

to be fighting for the King against his cousins of Wynford Eagle.

These from the days of the original Thomas—after whom and his grandfather Sydenham was named—had been quiet country gentlemen living upon the land, marrying in their own order, and handing down their property. And Sydenham himself, born in 1624 to William Sydenham and Mary his wife, was the fifth son in a family of ten, seven of them boys, of whom two died in infancy. Of those that grew up with him, William, his eldest brother, became one of Cromwell's most trusted supporters, Francis, the second, a major in the Parliamentary army, was killed at Weymouth at the age of twenty-seven, his younger brother John, also a major, was killed in Scotland fighting against Charles II., and Richard, the youngest, became a Commissioner of Rents at Worcester House, Strand, during the Commonwealth.

The whole family, indeed, would seem to have been brought up deeply imbued with Puritan principles. And apart from what may be divined from this and a sturdy physique, nothing is known of Sydenham as a child, unless we may assume with Osler that in reality we know everything, childhood being 'one of the immutable things.' He has at any rate left us—and with every imaginative right as the son of an equally large and country-bred family—a charming picture of Wynford Eagle on a summer afternoon two and a half

centuries later, with the little Sydenham, in the person of a small successor, swaggering down the lane again behind the sheep, and the manor itself, dwindled to a farm-house, still remote amongst its downs. Strong as the Sydenhams were, too, on the side of the Parliament, and sincerely religious as they seem to have been, they were not of the fanatics that, in its later years, the Commonwealth was to produce. And although he must have been aware of the political clouds slowly deepening above his home, it was probably after a boyhood as untroubled as Osler suggests that he went up to Oxford in May 1642.

This was to Magdalen Hall, afterwards merged with Hertford. And since his eldest brother had been to Trinity, it had no doubt been chosen for him, in view of the times, as a contemporary stronghold of Puritan youth. But his first stay at Oxford was destined to be brief. It was in the following August that the war broke out. And if little is to be heard of the family during its first few months, this was probably because in Dorsetshire, where they did most of their fighting, the supporters of the Parliament held an initial ascendancy.

Later this was to pass from them. And it was in the next year, after the Royalist armies had overrun the county, that the brothers appear again in the person of William, holding out at Poole with a Puritan remnant, and already earning a reputation as

a daring leader of cavalry raids. Presently he was to increase this by devising an ambuscade in which the Earl of Crawford was disastrously outwitted. And in 1644, with the rank of colonel, and after the Earl of Essex had retrieved the general situation, he was made governor of Weymouth and given the command of a thousand foot and three troops of dragoons.

It was a responsible post for a lad of twenty-nine. But he seems to have been adequate to the occasion. And it is interesting to find his father, who had been captured earlier in the war and held a prisoner for nine months, content to be serving under him during a campaign that was rapidly sinking into savagery. This was partly due to the Puritan indignation at the employment against them of Irish Roman Catholics, and partly to the license of the roving cavaliers, particularly those under Lord Goring. And though the brothers fell foul of their local commander-in-chief—later, as Lord Ashley, the patron of Sydenham's friend Locke—by permitting the surrender of a Royalist garrison that Ashley had intended to perish in the flames, Colonel Sydenham had hanged without scruple eight of his prisoners who were Irish. And in the same month his mother was killed, presumably during a raid upon Wynford Eagle.

Afterwards, or so it has been said, this was revenged by one of her sons, probably Francis, during a street fight in Dorchester, in which he recognized and slew

with his own hand the Royalist major, who had been responsible—an incident to be followed, within a couple of months, by his own death in the struggle for Weymouth, lost and recaptured by his elder brother, and in which Sydenham himself appears to have been wounded.

Such was the family's record in the first Civil War, that ended with Colonel Sydenham as Governor of Bristol, his father a widower, Francis dead, and Sydenham at twenty-two wending his way back to Oxford. What he was to do there, he was not quite clear. But by one of the accidents that shape events, he happened in London upon a Dr. Coxe, who was professionally attending his elder brother. Whether he was the great man that Sydenham assures us must depend upon the sense in which he used the word. But he was at least a kindly one to the young soldier, with his four derelict years behind him. And moved, as Sydenham tells us, by his record and influence, and 'in some way,' as he supposes, by his own destiny, it was with the quite new intention of becoming a doctor that he continued his journey to Magdalen Hall.

That was in 1646 or early the next year. But by the following October he had moved to Wadham, where he assisted the Parliament in applying its purge to a hitherto Royalist university, and the subsequent head of which was Dr. Wilkins, the versatile Presbyterian who married Cromwell's sister, but was afterwards

successful enough, under Charles II., to become the Bishop of Chester. Wilkins was a genuine scholar, however, and together with Dr. Goddard, the son of a Deptford shipbuilder and Cromwell's physician, Wallis, the clerk of the Westminster Assembly, and Harvey's friend, Dr. George Ent, he had belonged in London, during the war, to what was known as the 'Invisible College'—the learned discussion-group that, a few years later, was to blossom into the Royal Society.

Meanwhile, under the special regulations for the granting of degrees to students whose careers had been interrupted, Sydenham, after a little more than a year's study, had been made a Bachelor of Medicine. And rudimentary as his knowledge must have been, he was given a Fellowship at All Souls in October 1648. Five months later he was appointed Bursar, and must therefore have been free from financial cares, although he continued, a trifle laboriously, to try and make up for his lost time. With regard to his Latin, for instance, at which he never became very proficient, he tells us that it was his custom to translate a passage from Cicero, re-translate it from his own English, and then compare the result with the original.

But his stay at Oxford was again to be interrupted. Fourteen months after he had received his Bursarship, Prince Charles landed in Scotland. And within six weeks of this, and in less than two months after his

return from subduing Ireland, Cromwell was marching through Berwick with an army of sixteen thousand to deal with the new situation. About the same time, too, Sydenham's younger brother John, who had also been fighting in Ireland, applied to him for help in raising a troop of horse to assist in the Scottish campaign. And when the Parliament in England called out the militia in view of a possible Stuart rising farther south, Sydenham himself took up arms again as a captain of cavalry in the Midlands.

Meanwhile Cromwell, with Monk and Lambert, had won the battle of Dunbar and taken Edinburgh Castle. As the crowned King of Scotland, Charles was recuperating at Stirling, while Cromwell and Monk were ravaging the Highlands. And in the following July—John having died of wounds received during a skirmish near the Royalist headquarters—Sydenham with his regiment was serving on the Border, where he both 'led and doctored his men.' Later, when Charles came south, with Scotland falling behind him, he was with the Parliamentary horse in the Royalist rear. And it is probable that when Cromwell's army, hurrying back from Perth, caught up and defeated the Prince at Worcester, he took part in this final victory and the general pursuit that followed. He was at any rate awarded in 1653 a grant of £600 for his services and expenses. And since in modern money this would have amounted to about £2000, it may have

been a factor in determining his marriage and his ultimate establishment in a London practice.

That was not until 1655, however, his whole period at Oxford embracing about five and a half years. And in spite of his industry—or perhaps because of it—he seems to have been somewhat aloof from its general life. There is no record, for instance, of his association, though he afterwards became a friend of some of its members, with the Oxford representatives of the 'Invisible College,' still flourishing in London, and now including Goddard, who had become Warden of Merton in succession to the Sir Nathaniel Brent, whom Harvey had displaced, Thomas Willis, the famous anatomist, presently to be a fellow-practitioner in St. James's, Millington, a future President of the Royal College of Physicians, Robert Boyle and young Christopher Wren. This may possibly have been, of course, because he felt himself, at the time, not quite erudite enough for their company. More probably it was because of a conviction that they had little to teach him in respect of his chosen career. And though it was to Robert Boyle that he dedicated his first book, he was never quite of the world that Boyle represented.

As a man in the thirties, too, who had spent several years fighting and held responsible commands in the field, there would have been all the difference that this must have made between himself and his scholastic

equals—a younger and unscarred generation, a good deal more glib, probably, at its Latin. And although he must have worked under Petty, the able and vivid lecturer on anatomy, this was one of the studies that he considered relatively unimportant to the making of a bedside physician.

When he resigned his Fellowship, therefore, at the age of thirty-one on marrying Mary Gee and coming to town, it was as something of the outsider, professionally speaking, that he was for so long to be regarded in London—an odd figure, half countryman, half soldier, and so deeply pledged to the Puritan cause that socially, too, after the Restoration a few years later, he was regarded a little askance. As for his wife, whom he married at Wynford Eagle, hardly more is known of her than of Mrs. Harvey. But the marriage was evidently a happy one—they had three sons—and whatever the position was to become later, for a time at any rate his record and relationships must have been a very considerable advantage to him. Both his surviving brothers held Government appointments, and the eldest, who had been made Governor of the Isle of Wight, was a member of Parliament and one of the sanest and most temperate of Cromwell's advisers. Settling as he did, therefore, in a little house in Westminster, he must have been in the midst of influential friends, while Westminster itself—still scarcely more than a village clustering about the Abbey and the seat of

Government—was already beginning to witness the development of its surrounding fields into a new and fashionable residential quarter.

It was true that in the City many of the more prosperous merchants, such as Eliab Harvey, continued to live in state. But the pressure upon its narrow and often unsavoury streets was inducing others to build elsewhere. And while the poorer population was overflowing beyond the gates into such huddled and insanitary suburbs as were beginning to encroach upon Spittle Fields and the undrained fringes of Moorfields Marsh, there had been a movement of the wealthier to the neighbourhood of Covent Garden and the pleasant meadows of Charing Cross, the attractive dwellings that were just being erected at the lower end of St. Martin's Lane, and the streets and squares coming into being just to the north of St. James's Park.

It was to this latter district, indeed, that Sydenham moved after a couple of years in King Street—the street in which Spenser had died and Cromwell lived, and from which Milton in Petty France had been just round the corner. And in 1658 he seems to have taken a house upon what was then known as the Pavement, just to the south of the future St. James's Square and within sauntering distance of the open country. This was the year, too, in which he stood for Parliament—unsuccessfully, as candidate for Wey-

mouth—an excursion into politics from which it has been argued that his allegiance to medicine was not yet complete, but which may just as probably have been dictated by a sense of duty at an anxious moment. His candid mind, however, may still have mistrusted his practical equipment for attending the sick. And this was one of the reasons, no doubt, why a few months later he made the journey to Montpellier.

There may have been others, of course. It has been said that he accompanied a patient. And the political changes that followed the death of Cromwell—the leisurely march upon London of Monk and his army feeling the nation's pulse, and their ultimate welcome of Charles II.—had possibly been arguments in its favour. But it became the occasion, or so Dr. Picard would persuade us on the internal evidence of the two men's characters, of the permanent effect upon his teaching of a very original mind—that of Dr. Barbeyrac, who was exemplifying in Montpellier the value of bedside observation. Accompanied by his students in groups of ten or twelve, he would make each patient the subject of a discourse. And both as a countryman and a Protestant he would have been likely to attract Sydenham. He seems to have shared, too, though he left nothing in writing, Sydenham's readiness to dispense with drugs, to have been independent of the warring schools into which medical Europe was divided, and would clearly have approved,

even if he did not suggest, the lines upon which Sydenham conducted his practice.

This was renewed about 1661—perhaps for the first time, indeed, seriously begun—and under conditions that must once more have taxed all the stoicism at his command. He was no longer young as youth was then counted. The Commonwealth for which he had fought had disappeared. His younger brother Richard had died before he went to Montpellier. And before the year was out, there had been buried at Wynford Eagle his elder brother William, broken and in disgrace, his sister-in-law Grace, William's widow, and his old father, Captain Sydenham—the graves of them all to be untraceably lost in what are now the water-meadows of the farm, though a few of its acres, between the hills, are still associated with their name.

Lacking as he was, therefore, in the graces of a courtier, and with no desire to attain them, bereft of his brothers, and with a name under suspicion, though he was personally protected by the general amnesty, the prospects before him must have been sufficiently stern. And he was not even as yet officially licensed. That was to be remedied two years later, when he became a licentiate of the College of Physicians. But it was not until he was fifty-two, with a son at Cambridge, that he troubled himself to take an M.D. And to the end of his life there were many of his

colleagues who considered him uneducated to the point of danger.

On the other hand it is evident that, from the beginning, his freshness of outlook won him a following. His very disadvantages may have given him the time to test and develop his natural methods. And it was upon his observations of the next five years that the revolution of the sick-room was founded. Meanwhile he had moved into a new house on the north side of Pall Mall, looking south over St. James's Park —wherein he was to see, a few months before he died, perhaps with a certain ironic satisfaction, the Protestant soldiers of William, Prince of Orange, saying good-bye to the last of the Stuarts. And it was in 1665, when the menace of the Plague had emptied the neighbourhood of his patients, that he retired to the country with his wife and children and wrote the first of his six little books.

This was his *Methodus Curandi Febres*, a volume of less than 18,000 words, published in London and Amsterdam in 1666, and prefaced by a characteristic confession of faith. 'Whoever applies himself to medicine,' he writes, 'ought seriously to weigh the following considerations, first, that he will one day have to render an account to the Supreme Judge of the lives of sick persons committed to his care. Next, whatever skill or knowledge he may, by Divine favour, become possessed of, should be devoted above all

things to the glory of God and the welfare of the human race.' Finally 'the physician,' he adds, 'will care for the sick with more diligence and tenderness if he remembers that he himself is their fellow-sufferer.'

As for its contents, its 'method of curing fevers'—the 'cooling method' as it came to be labelled—this was based upon the conclusion that the fever itself was Nature's method of effecting a cure. In other words it was not the actual enemy. It was merely the evidence that the enemy was being attacked. And the duty of the physician was to assist, and only when it became too violent, to curb the remedy. There was no need, therefore, to smother the patient with bedclothes. He should be given a full measure of light and air. If he felt thirsty he was to have plenty to drink, but meat and victuals were not to be forced upon him. And it was not until the vanished fever left him exhausted that his appetite was to be tempted to support his strength.

Contrary as all this was, however, to the current practice, the real novelty of the book lay in something deeper. For while many of his deductions have ceased to be valid and much of his treatment has become archaic, it was the field-book of a naturalist—and the first in English medicine—untrammelled by theory and written at the actual bedside. With the eye of a botanist abroad on the hills, he approached and observed the diseases about him, noticing and recording

each detail of their manifestations, the contingent groups in which they appeared to occur, the climatic conditions under which they waxed or waned, and the efforts of Nature to overcome them. 'If only one person,' he wrote, 'in every age had accurately described and constantly cured but a single disease, and made known his secret, physic would not now be where it is.'

Ten years later, in an enlarged third edition, dedicated to his friend Dr. Mapletoft—the Professor of Medicine at Gresham College, who had probably translated it into the requisite Latin—he had amplified and added to these observations. And it was this book, his 'Medical Observations on the history and cure of Acute Diseases,' that was to contain his full gospel. 'In writing a history of diseases every philosophical hypothesis which may have preoccupied the mind of the author must be entirely laid aside, so that nothing may prevent him from most minutely scrutinizing all their natural phenomena.' 'It is right and necessary to distinguish . . . the constant and characteristic symptoms of a disease from those which are merely accidental and adventitious.' 'It has been from this want of accuracy in distinguishing seemingly similar diseases that the materia medica has grown into so large a wood yet bearing withal so little fruit.'

Thus it ran, and by the time it appeared in its riper form of 1676, Sydenham's work had already established

him as one of the leading physicians of his age. With John Locke, private physician to Lord Ashley and the future philosopher of the *Human Understanding*, he was a fast friend, Locke often accompanying him to the bedside of his patients. And if his practice was not a fashionable one, it was at least conducted in a growingly fashionable neighbourhood. In the fields behind him, St. James's Square had come into being and already contained the town mansions of the Marquis of Blandford, the Earl of Oxford, the Earl of Clarendon, Madam Churchill and the Madam Davis who, as Moll the dancer, was one of the mistresses of Charles II. And opposite him in Pall Mall, within a door or two of Lady Ranelagh and the Countess of Northesk, was living Nell Gwynne.

For the Puritan doctor it was perhaps an odd setting. But his own life remained of the simplest—as simple as the little books that followed the 'Observations' and ushered in a new era for clinical medicine. These in order were a couple of letters, enclosed in a single volume and published in 1680, one on epidemics —Sydenham was the first accurately to describe scarlet fever—and the second on syphilis, both of them written to medical friends of his at Cambridge. The next was also in the form of a letter, dealing with small-pox and hysteria—'very well writt,' as old Sir Thomas Browne told his son, 'wherein are many good things and some very paradoxicall.' And the remain-

ing two, published respectively in his sixtieth and sixty-third year, included his classical description of gout, unsurpassed in medical literature—'Gout rarely attacks fools,' he said, 'but those who choose may except the present writer'—and the chorea of childhood, known as St. Vitus' dance, which he was again the first to differentiate. 'And this is about the sum,' he concluded in his downright fashion, 'of all I know respecting the cure of diseases up to the day on which I write—namely the 29th September, 1686.'

That was three years before his death. But perhaps the most popular of all his books was the posthumous collection, edited by Dr. Monfort, of certain manuscripts that he had left behind him. These had been written for his eldest son, who had qualified as a physician two years before, and were published in Latin under the alluring but very un-Sydenhamlike title, *Complete Methods for treating almost all Diseases*. In this form many thousands were sold, and in its original English, as *Dr. Sydenham's Practice of Physick*, it became the handbook of every general practitioner for nearly a century to come.

Such were the written works of 'the Prince of practical physicians,' as the author of *Rab and his Friends* affectionately calls him. And his handling of patients was entirely consonant with the spirit that they reflect. Drugs he used sparingly, according to the standard of his time, though one of his prescrip-

tions contains eighteen ingredients. But he lent the weight of his approval to the administration of quinine and was the first to use it as a tonic. And he was also the first to employ opium in the liquid form of laudanum. 'It is a great mistake,' however, he once wrote, 'to suppose that Nature always stands in need of the assistance of art . . . nor do I think it below me to acknowledge that, when no manifest indication pointed out to me what was to be done, I have consulted the safety of my patient and my own reputation most effectually by doing nothing at all.'

Horse-riding he believed in, as 'nothing so cherishes and strengthens the blood and spirits,' and put this into practice by lending one of his own horses for a poorer patient to ride. On one occasion, too, being approached by a client with a wholly imaginary complaint, he gravely suggested a consultation with an equally imaginary doctor in Inverness—the result being the return, several weeks later, of a wrathful but cured hypochondriac. That he had his prejudices, however, cannot be denied. And he was not only out of sympathy with laboratory research, but naïvely ignorant of its achievements. Twenty years, for instance, after Malpighi had found the connections between the arteries and veins, he committed himself to the opinion that the microscope would never discover them. And when young Hans Sloane—presently to be the first medical baronet, squire of Chelsea, and founder of the

British Museum—tentatively suggested a certain value in the study of anatomy and botany, he was caustically informed of an old woman in Covent Garden, who could beat all the botanists at their own game, while as for anatomy, Sydenham's butcher could dissect a joint just as well. 'No, young man,' he said, 'this is all stuff. You must go to the bedside; it is there alone you can learn disease.'

So he emerges for us, in his later years, fasting till noon save for a cup or two of tea, driving in his coach from his door in Pall Mall, for a busy round before his midday meal, permitting himself to indulge at this —with an eye on his gout and the tendency to stone from which he died—in a modest glass of Canary wine before his afternoon drive into the country, and retiring early to bed with a tankard of small beer, which it was his custom to drink before going to sleep. In such full measure as it came to Harvey, he was never to enjoy the world's recognition, although his collected works were to be printed many times over, both in England and upon the Continent. But he had long ago weighed in a 'nice and scrupulous balance whether it be better to serve men or be praised by them.' And since, as he has told us, he preferred the former, his lack of glory may not have troubled him.

V

HANS SLOANE

After the gods come the half-gods, and between the death of Sydenham in 1689 and the birth of John Hunter in 1728 there was no one in English medicine of a similar stature. With the possible exception, indeed, of Boerhaave of Leyden, a lad of twenty when Sydenham died, and the great physiologist Albrecht von Haller, a lad of twenty when Hunter was born, the same could be said of medicine in general. And it was rather in the sciences that were to become ancillary to it that the chief progress was being made.

Thus the microscope, developing in various hands, was regularly recording little discoveries, interesting at the moment and presently in the aggregate to alter the whole conception of the origin of disease. While Sydenham was at Montpellier, for instance, Swammerdam, a Dutchman, had been the first to alight on the red blood-corpuscles. Four years later, his countryman, De Graaf, had shown the presence of ova in the female organs of generation. And within the ten years following 1673 yet another Dutchman, Leeuwenhoek of Delft, had described the corresponding elements in the male, the lowly organisms known as protozoa,

and the existence of bacteria in the cavities of teeth. Thanks to Robert Hooke, too, the somewhat parsimonious but brilliant curator of the Royal Society, the term 'cell' had made its initial appearance in connection with the minuter structure of plants, and the Royal Society itself, now finally emerged from the 'Invisible College' of Boyle and his friends, was perhaps the chief evidence, at any rate in England, of the growing interest in experimental science.

Embodied for the 'improvement of Natural knowledge,' it had received its charter from Charles II. Included in its ranks were men of such differing genius as Locke, Pepys, and Christopher Wren. And from the first it had assumed the prestige that it has never since lost in the scientific world. Either at its meetings or in its *Philosophical Transactions*—the pioneer of technical journalism—most of the discoveries of the age had received their baptism of publicity. Its Fellows had been present at one of the earliest blood-transfusions. They had witnessed an animal being kept alive by artificial respiration. One of them had chosen the site of the Greenwich Observatory. Another had become its first official astronomer. And it was to the Royal Society, just before Sydenham's death, that Newton had dedicated his *Principia*—the volume that was finally to complete in the minds of his contemporaries the idea of an ordered and consistent universe.

By then the Society was a quarter of a century old, and it would have been difficult to discern in its records more than an echo, and scarcely that, of the turbulent era through which it had passed. Now and again maybe, thanks to regrettable activities in the lay or political world outside, a Fellow would disappear to the camp or the Tower, to some enforced or voluntary exile. But the meetings went on, the *Transactions* were discussed, apparently regardless of lesser events—the philanderings with his mistresses of the restored Charles II., the Protestant storms to which he uneasily bowed, the blockade of London by the Dutch Navy, the plots and counterplots of Catholics and Churchmen, the rise of the Whigs, the accession of James II., the rebellion of Monmouth and the Bloody Assizes, the trial of the Bishops, the December rumours of Irishmen marching to the sack of London, the soldiery of William of Orange in St. James's Park, and the ultimate flight of the King he displaced. And though they were not to escape wholly immune from the irreverent wits of the period, its Fellows were to have the satisfaction, during the reigns of William and Mary, Queen Anne and the first of the Georges, of seeing their Society prosperously established as an integral part of the country's life.

For the doctors too, and especially the physicians, this was to be an age of golden prosperity, defeated as they were in the professional civil war, hymned by

Garth in his *Dispensary*. This was due to the fact that the College of Physicians had bound both its Fellows and Licentiates to attend the sick poor in London and its suburbs without making a charge for their services —a boon somewhat discounted by the excessive prices charged by the apothecaries for their goods. A movement had consequently been made by the leading physicians for the setting up of independent dispensaries—places where the poor could be supplied with drugs at cost price or a little over—but was stoutly opposed and finally suppressed by the apothecaries' new and powerful Society.

This had come into being during the reign of James I. as the result of a divorce from the grocers, 'that the ignorance and rashness of presumptuous empirics and unexpert men might be restrained.' And the action of its members in remaining, as most of them did, at their posts of danger during the Plague, had made a deep impression in their favour upon all classes of the community. With their City headquarters, therefore, in Water Lane, their processional barge, and their Physic Garden at Chelsea, they had assumed a dignity that was demanding from entrants a very much higher educational standard. And being allowed to prescribe as well as dispense, they had already become, as was officially recognized later, a body that, to all intents and purposes, was qualifying its members for general medical practice.

Despite their rebuff, however, the physicians remained as before comfortably ensconced in their position of supremacy. And while the surgeons were still linked with the barbers—and in the German army, indeed, expected to shave the officers—the group of physicians that followed Sydenham, if relatively unimportant to the advance of medicine, was perhaps the most cultured and certainly the most opulent that had ever appeared in English history. Sir Richard Blackmore, the irascible Radcliffe, the founder of the Radcliffe Infirmary at Oxford, Hamilton, Mead and Arbuthnot—they all belonged to this favoured generation. And none was to be more typical of its peculiar attainments, as an amasser of wealth, learning and distinction, than the personable young Ulsterman, whom Sydenham had loved, and who had acted for a time as his assistant.

Later in life, perhaps, loaded with honours and tending with the years to become a trifle platitudinous, there was to be an occasional whisper that, for all his benevolence, the old man had known how to play his cards—that as President of the Royal Society in the wake of Newton, his abilities had certainly not been under-valued; that his monstrous collections, the germ of the British Museum, betrayed as much credulity as discrimination; and that even his medical knowledge had scarcely been as profound as the impression he had contrived to make with it. But of

any old man as immensely successful and as complete a courtier the same would have been said. And although it may have been possible, as a Scotchman born near Belfast, that the career of Sir Hans had a certain interest for him, it needs but a glance at his huge correspondence to discover at least a dozen as dear to his heart.

Books and plants, curiosities of all sorts, the latest discovery in every branch of science, the fortunes and misfortunes of his friends and acquaintances, they are the perennial burden of the letters addressed to him. And even the letters themselves, however obscure their writers, he seems to have regarded as objects of value. At any rate there they are, preserved in their thousands, letters from patients and patients' friends—from worried country doctors asking for advice, from lunatics, parsons, and peers of the realm, from a debtor in gaol accompanying a poem, epistles in Latin from sages abroad, a letter from Pepys to whom he had lent a jewel, from the Bishop of Norwich to whom he had lent a book, from the Duke of Bedford, 'your faithful friend,' from the Duchess of Richmond to her 'good Sir Hans Sloane,' from the widow of an old teacher to whom he had sent twenty pounds, from the elder Lord Chesterfield, promising himself when he came to town 'the satisfaction of having sometimes your company,' from the Duchess of Portland, something of a critic, but anxious that he should come round

and see one of her servants, from Sir Robert Walpole, staying in Paris, and not quite happy about his son in Kensington; and mirror'd in them all, shrewd and serene, the same good-tempered and methodical figure, a little inclined, perhaps, to take himself seriously—but not unjustified, surely, by results—and as unsparing of himself at eighty as he had been at twenty-eight.

By then—and he was to be ninety-two before he died—he often 'wondered he was so long alive.' But he was of sober stock on both sides, and although most of his life was to be spent in London, it rested like Sydenham's upon the foundation of a quiet and remote country boyhood. This had been lived, 'very much pleas'd,' as he tells us, 'with the Study of Plants and other Parts of Nature,' chiefly at Killileagh in County Down, on the western shore of Lough Strangford, where he had been the seventh son of Alexander Sloane, the head of one of James I.'s Scottish settlements. Later his father, who died when Hans was six, had been made a Receiver-General of Taxes, his mother being the daughter of a Church of England clergyman, who had been prebendary of Winchester and chaplain to Archbishop Laud. Of his six brothers, it was only the eldest who was to share with Hans any public distinction—succeeding at the Bar and becoming in due course a Member of Parliament for Thetford in Norfolk—two of the others

dying without issue, and two more in early life, while Hans himself, at the age of sixteen, became an invalid for nearly three years.

This was due, we are told, to a hæmorrhage of the lungs, and in an age of excess it may have been a blessing in disguise, since it restricted him, for the rest of his life, to no more than a glass of wine a day. And it was possibly the reason why, in his eighteenth year, he finally determined to become a doctor, settling in London and finding a room for himself next door to the Apothecaries' Hall. Here he studied chemistry under Mr. Stapherst, a former teacher of the subject at Cambridge, botany under Mr. Watts at the Chelsea Physic Garden, from which the first cotton seeds were to be sent to America. And he seems characteristically to have won the regard of such men as Boyle and John Ray without losing the friendship of his younger and still uncelebrated contemporaries. To Tancred Robinson, for instance—later, as Sir Tancred, one of the physicians of George I.—he was the 'young Pliny,' at whose shrine Tancred designed 'to pay his adoration.' And if a playful criticism lurks in the letter of an already Hans-like dignity of demeanour —he proposes to call upon him, he says, on Wednesday afternoon, 'if your Divinity will then be at leisure' —its affection is manifest, and it was with Wakeley and Tancred that he presently set out for the Continent.

He was then twenty-two, not very well off, but apparently with sufficient money in his pocket, and for all Tancred's gaiety and Hans' social graces, the three friends were certainly not idle. Thus at Paris, we are told—their first destination—they were at the Jardin des Plantes by six every morning, where the famous Monsieur Tournefort discoursed until eight upon the various botanical orders, followed from eight to ten by Monsieur Duforty, who expounded their medical virtues. There then followed lectures on anatomy and chemistry. Cases were seen at the Hospital of La Charité. And it was at Paris that Hans met Dr. Holton, the English professor of botany at Leyden University, upon whose advice he took his degree there on July 28, 1683.

It was the first step on the academic ladder. But with Robinson and Wakeley he went on to Montpellier, where he lodged in the house of Barbeyrac's apothecary, and doubtless imbibed some of the great physician's teaching, though much of his time seems to have been spent rambling the country in search of plants. At any rate it was for this purpose that he stayed on there after Wakeley and Robinson had left for Italy, returning to England in the following year with the first of his lifelong series of collections, and confirming a friendship thereby with John Ray, the recognized leader of English botany. For the next twenty years, indeed, they wrote to each other regu-

larly, and it was to Sloane that Ray wrote his last letter 'to take a final leave,' as he said, 'of *the best of friends*,' and 'God requite your kindness.'

Devoted as he was, however, to the study of plants, it was upon medicine that he had to depend for a living. And although in a few years' time he was to have another and wider opportunity of indulging his hobby, there were various reasons, as he was practical enough to realize, why it should be kept for the present in the background. For one thing it was expensive both in time and money. And for another he had been fortunate enough to make the acquaintance of Sydenham, whose views on botany for bedside doctors were certainly not those of a fellow-enthusiast. Moreover Sydenham had invited him to share his roof, first as a pupil and then an assistant. And for the next three or four years he was busy obtaining an insight into the demands of a responsible consulting practice. Very soon, in fact, owing to Sydenham's failing health, he was playing the part of his representative. And when in 1688 the second Duke of Albemarle was appointed Governor of Jamaica, it was young Dr. Sloane, upon the advice of the family physician, who received the offer of accompanying him.

From a medical point of view it was not likely to be an easy task. The Duchess was eccentric if not actually insane. The yellow-skinned Duke, accustomed, as Sloane tactfully puts it, 'to sitting up late

and often being merry,' was clearly unfitted, as the event proved, for life in a fever-stricken island. And to Sydenham, divining, not incorrectly, the cloven hoof of botany at the back of his assistant's mind, the scheme was almost as mad, if that were possible, as the Duchess herself. But deeply as he was attached to the sardonic old Puritan, Sloane had already made up his mind. The terms proposed were not ungenerous. The Albemarles were rich and had powerful friends. And attracted as he was by the chance of observing the fauna and flora of Jamaica—he would be the first scientifically trained man that had ever visited the island—he saw no reason, apart from natural risks, why his career should suffer.

Smiling at Sydenham's advice, therefore—they were sauntering in St. James's Park—that it would be better to drown himself in Rosamund's Pond, he wrote to John Ray, said good-bye to his friends, who drank his health, we are told, in 'noble Florence,' joined the frigate *Assistance* at Spithead, visited a convent at Madeira, where the handsome young doctor from Pall Mall was duly rewarded with virginal sweetmeats, enjoyed such a dessert with the Governor of Barbadoes that he thought all his 'fatigues well bestow'd,' and arrived at Jamaica to be consulted, in fifteen months, by nearly every planter in the island; to keep exact and Sydenham-like notes of all his principal cases; and to collect, classify, and bring home more

than eight hundred different species of plants. Afterwards in two volumes, the first dedicated to Queen Anne, and the second, twenty years later, to George I., he was to write at his leisure, and in modest and straightforward English, an account of all he had seen there. And although as a botanist he was never in the front rank, these and the preliminary catalogue published in 1696 have remained of solid historical value.

For the general reader, however, the interest of the book must chiefly rest in its introduction. And from the hundred or more cases that he there describes, discreetly sheltered behind their initials, there emerges a picture of the island life such as it would be difficult to find elsewhere. It is pleasant to learn, too, that although he was uneasy 'lest by ignorance, I should kill instead of curing,' his medicines 'had the better operation because people had a belief that I could help them,' and submitted to his remedies without 'judging harshly in case the Person died.' That was perhaps fortunate since a majority of them did—Hans is scrupulously honest in recording his failures—though usually for reasons associated with 'often being merry,' for which he can scarcely be blamed. And included amongst them, as Sir H. M., was the turbulent old buccaneer, Sir Henry Morgan.

Officially, as a knight and an ex-deputy-Governor, he was ending his days in the odour of sanctity, and had

even obtained damages from an English printer, rash enough to describe him as a pirate. But as a private citizen he was clearly a problem beyond the capacity of Sloane. The Duke's physician, indeed, appears to have been only one of a long and many-coloured series, his final attendant being an heroic negro who 'plaistered him all over with Clay and Water,' but seems in consequence, as Sloane modestly suggests, rather to have 'augmented' his patient's cough. In any case he died, to be followed in a few months—and for much the same reason—by the Duke himself, leaving Sloane to pack up his plants, comfort the Duchess, in which he succeeded admirably, and escort her home together with a menagerie that included a water-snake, a lizard, and a crocodile. With these he was less fortunate, as the lizard leapt overboard, the crocodile died in its tub, and the snake, 'being weary of its confinement,' seems to have found some 'footmen and other domestics,' who 'being afraid,' says Hans, 'to lie down in such company shot my snake dead.' But apart from this, the voyage was accomplished in safety, Hans obligingly acting as an advance guard to be informed by a fisherman, a few miles out of Plymouth, that William and Mary were now on the throne.

That was in May 1689, and from every point of view the adventure had justified itself. His collection of plants and other natural objects became the talk of

the fashionable town. It was visited by Evelyn and an emissary from France, sent by his old instructor, Monsieur Tournefort, and lent a new inspiration to expeditional botany, both in England and upon the Continent. Impressed as he had been, too, by its efficacy during his treatment of the island fevers, he had shrewdly invested most of his earnings in a consignment of Peruvian Bark. And the eccentric Duchess, who had announced to the world that her second husband must be a crowned head, had become so attached to him that, for the next six years, he was practically her guest.

For the first three of them, this was at Newcastle House—she had been a daughter of the second Duke—in the pleasant suburb of Clerkenwell. But in 1692 she succumbed to Ralph Montagu, who had thought it a pity that her fortune should go begging, and had proceeded to secure it, without cant, in the character of the Emperor of China. According to Swift, who was perhaps prejudiced, he was 'as arrant a knave as any in his time.' But Montagu House, in its Bloomsbury grounds, was probably the finest in London. And Hans, who was always susceptible to the appeal of a marriage adequately blessed with jointures, seems to have been quite content to accept it as his headquarters till his own wedding in 1695.

Meanwhile his reputation had been steadily increasing, and he was working as hard as ever. At the age

of thirty-three he had become secretary to the Royal Society, reviving and editing its *Philosophical Transactions*. And both as a coffee-house consultant, after the fashion of the day—he had been made a Fellow of the College of Physicians before going to Jamaica—and amongst the Duchess's aristocratic friends, he was building up a large and lucrative practice. It had only remained, therefore, to get married—suitably compassed, at the age of thirty-five, with Elizabeth Rose, the widow of a Jamaica magnate and the daughter of a wealthy London alderman. That she was a trifle his senior, with a daughter of her own, and exceedingly well provided for—that was, of course, true. But Hans was no Montagu. If he had woo'd discreetly, it seems to have been a marriage of real affection. And settling, as he did, into a comfortable house at the corner of Bloomsbury Square and Southampton Street, he was excellently placed both from a social and professional point of view.

Montagu House, with its French gardens, was still but a few minutes' walk away. The Holborn coaching inns, beloved of the rural gentry—many of whom were his clients—were almost as near. And the Square itself, gathered about Southampton House, with the Hampstead uplands shining beyond—'our Square,' as Lady Russell called it—was both aristocratic and distinguished. Such diverse celebrities as Richard Baxter, Lady Baltinglass and Lord Chesterfield

had become its inhabitants since Evelyn had dined there, thirty years before, with the Earl of Southampton. And a little while later it was to behold the historic dinner given to Prince Eugene by old Dr. Radcliffe, at which 'barons of beef, juggets of mutton, and legs of pork' were to be the first course, washed down by unlimited ale 'seven years in the cask.'

For a young, well-married and rising physician it was therefore an ideal situation. And although it was his boast that he never had at his table salmon, burgundy, or champagne, it was soon to become known as one of the best furnished and most hospitable in London. Apart from the loss, indeed, of two of his children, his domestic life appears to have been entirely serene. His remaining daughters, Sarah and Elizabeth, were to make marriages after his own heart. And even his professional troubles, such as they were, appear to have been of a singularly minor order. There was the scribbled note, for instance, from the apothecary Malthus, who had come to tell him 'that Mrs. Randall's daughter hath used the lotion four nights, and says the pimples are more in number and larger than they were.' And like most of his colleagues he was to hear some plain words from the formidable Sarah, Duchess of Marlborough. But Malthus, himself promoted to Windsor, was to see him arriving there one day in state. And long after

the Duchess had fallen from power, there were plenty of others glad to consult him.

This was probably because he was at once modern, as a disciple of Sydenham—an observant clinician, sparing of drugs—and essentially safe, with a fund of common-sense and a bedside manner beyond reproach. And although he was to contribute nothing of moment to medical literature, he was obviously regarded as a serious authority. While still a young man, for example, he was consulted by Locke—a sufficient tribute to his capacity. And before he was forty his friend Dr. Charlett, the master of University College, Oxford, had begun to advise his more promising students to pay a call at Bloomsbury Square. Not all of these seem, at first sight, to have been particularly engaging, one of them being described, even by his introducer, as 'a gentleman of a bashful, sheepish, cloudy, mathematical, unpromising aspect.' But Hans appears to have accepted them with his usual good temper. Many of them, when in practice, would doubtless send him patients. And even apart from this, his habit of friendship would have been sufficient to ensure their welcome.

As a man of the world, too, he seems to have been the best of company, Pepys almost wishing himself an invalid 'that I might have a pretence to invite you for an hour or 2 by your selfe.' And his services were in demand, as his letters prove, for a hundred other than

medical reasons. Young Edward Southwell, afterwards Secretary of State for Ireland, wants to learn Spanish, and it is Hans who puts him in the way of it. And a few years later it is Hans who promotes his marriage with his Lady Betty—and £2000 a year. Thomas Dover, the doctor-privateer and author of a still celebrated powder, is about to set up for himself in Bristol, and it is Hans who provides the necessary recommendations. And it is Hans who is to whisper in an influential ear the word of promotion for a junior officer.

But it was less, after all, as a doctor and diplomatist than as a collector that he was to benefit posterity, though it is probably by his dealings in real estate that he is most familiar to Londoners. It may be doubted, indeed, whether for every thousand of them that have sauntered down Sloane Street or turned into Hans Place, a dozen have realized their debt to him for the British Museum and all that it represents. And there were not very many, perhaps, even in his own day, conscious of the value of what he was doing. But it was his hobby. Free from financial care, he was now in a position to give it rein, and faithful as he remained to his plants and flowers, he was soon venturing into other fields. Thus before he was forty we find a friend from Dublin shipping him a fragment of the Giant's Causeway, two joints of which he was afterwards to give to Pope for the latter's grotto at

Twickenham. And at forty-two he was to acquire the first of the three great collections that he absorbed into his own.

This was the museum of William Courten, or William Charlton as he usually called himself, a grandson of Sir William Courten, the well-known Elizabethan merchant-adventurer, and himself rather an odd character, first encountered by Hans at Montpellier. Afterwards Hans had given him his choice of anything that he wanted from his own treasures brought back from Jamaica, become his doctor when he returned to England and settled down in the Middle Temple, and finally, on Courten's death had found himself his heir, provided that he attended to certain legacies. He had suddenly become the owner, therefore, of a vast accumulation of coins, medals, and precious stones, shells and insects, skeletons of fish, miniatures, portraits, and drawings of birds. And a few years later—just before he bought the manor house of Chelsea, in which they were ultimately to be housed—he was able to add to them some eight thousand plants, purchased from the estate of Dr. Plukenet.

By then he had seen published the first volume of his own work upon Jamaica. He had been summoned to Windsor—and received £100 for it—to consult with Arbuthnot on Prince George of Denmark. And little as could be done, in view of his habits, for the bibulous husband of Queen Anne, the Queen herself

had evidently formed a favourable opinion of his skill. He was at any rate to be present during her last illness in the official capacity of a Royal physician; to be made a baronet by George I., upon which he was congratulated by Boerhaave; and at the age of fifty-six he was not only physician to the King, but physician in chief to the Army. He had also been elected to the Royal Society of Berlin and the French Academy of Sciences. And within the next five years he was to become President of the College of Physicians; to buy the botanical collection—nearly as large as Plukenet's—of the Aldersgate apothecary, James Petiver; to see his daughter Elizabeth married to Lord Cadogan, and her sister to George Stanley of Paultons near Romsey; and to give the Society of Apothecaries the little Physic Garden in which he had studied as a boy.

It has since passed from them. But it is still there, walled from the river now by Chelsea Embankment, but with its original gates of wrought Sussex iron and a stiff little Hans surveying its paths. Not much else is left, indeed, of the village he knew, with its spacious riverside houses—the manor that he had bought for himself, once the abode of Henry VIII., Lady Jane Grey and Lord Howard of Effingham, the mellow-bricked palace of the Bishops of Winchester, the home of the Duchess of Monmouth ending her days, the house of Sir John Danvers, with its Italian Garden,

the first of its kind to be seen in England, and in the fields behind them, leading to Hampton Court, the country lane known as the King's Road. For some of the destruction he was to be responsible himself, notably of Beaufort House, the home of Sir Thomas More, although he spared the gates, designed by Inigo Jones, making a present of them to his friend Lord Burlington. But that was not yet. Though he was sixty-one, he was still at the height of his practice —a double-chinned, kindly and prosperous figure, far too busy to think of retiring—and it was only at odd moments that he could spare time to visit his property by the river.

On a Saturday evening, if it could be managed, it was pleasant to drive down there for dinner, and especially after he had been robbed by the death of his wife of his thirty-years' companion in the house at Bloomsbury. But half the peerage was now on his hands and would have nobody else to attend it. His consulting-rooms were crowded, till ten every morning, with the poor whom he saw for nothing. There were important questions, such as the new inoculation for small-pox, upon which the Royal Family had to be advised. At the age of sixty-seven he became physician to George II. and President of the Royal Society after Newton. In the middle seventies he was dining with the Prince of Orange and being a trifle bored by Linnæus. A couple of years later he was

chuckling over letters from Bath, where his daughter Elizabeth was taking a cure, 'vastly full but very little good company except what belongs to their Royal Highnesses,' and where there were nineteen physicians, 'which Lord Chesterfield says is the reason the waters do no good.' And it was not until he was eighty that he made up his mind, rather reluctantly, to retire to Chelsea.

Even then, deaf and a little rheumatic—and with a threat of paralysis that had hastened his decision—he would potter about his garden, until he had to be wheeled into it, and drink a cup of coffee with his old friends. Not that many of them were left, now that he had a grandson in Parliament. But Tancred was alive, though he was to survive him, and there was an agreeable young naturalist who visited him once a week, primed with the gossip of the outside world. There was his beloved collection, too, willed to the nation for less than a quarter of its real value—his mummies and urns and medals and coins, his fifty thousand books and his stuffed animals. 'Sharks with one ear and spiders as big as geese,' as Horace Walpole was irreverently to describe them, but they were to be visited in state by the Prince and Princess of Wales, and that was probably the last of his great days. For some time, we are told, the Prince sat and talked to him, eighty-eight and confined to his chair. And it was in his ninety-third year, after a few days'

illness, that he was buried at Chelsea beside his wife.

It was the end of a career that, from a worldly standpoint, no English doctor has since equalled. And even after his death, respectfully mourned, not a plan seems to have gone awry. His Chelsea estate, divided between his daughters, was to yield its harvest to their descendants, and, not without hesitation and a certain discharge of wit, the country agreed to accept his collection. By an appropriate chance, too, it was to return to Bloomsbury, since Montagu House happened to be on the market, and there, in due course, with the Harleian and Cotton Bequests, it was to become known as the British Museum. But of Hans himself, it must be admitted, curiously little seems to have remained—a roomful of letters, his name on a street or two, a second-rate statue beginning to crumble—Time's revenge, perhaps, for a success a trifle too complete at the moment.

VI

JOHN HUNTER

Few would have guessed on the day he rode into London with nothing but immortality in his pocket that, as between John Hunter and the great Sir Hans, it was for the lowland farm boy that the century would be memorable. And they would have been fewer still, could it have been foreseen that he was about to dedicate himself to the art of surgery. Not very many, indeed, would have considered it an art at all, although the word had just crept into official use, thanks to the general separation that had at last taken place between the surgeons and the barbers.

This had begun in France, where Louis XIV., after the failure of his physicians, had been relieved from a painful condition by the skill of the surgeon Félix. And it was largely owing to Félix, who had been ennobled, and his brilliant successors, Mareschal and La Peyronie, that the French surgeons had begun to establish claims that could no longer be denied. Not without a protest from the alarmed physicians, there had suddenly been founded at St. Côme—the ancient College of the Barber-Surgeons—five new chairs of surgical instruction. And with the subsequent appear-

ance in 1731, under Louis XV., of the Academy of Surgery, they had definitely emerged into public recognition as an independent and authoritative body. A similar move had taken place in Scotland, and after the usual hesitation in England too, the English surgeons finally obtaining their freedom under a charter of 1745. Henceforward—the barbers being still allowed to draw teeth—they were to have their own hall in the Old Bailey. They were to be known as the Masters, Governors, and Commonalty of the Art and Science of Surgeons of London. And it was to be a penal offence for anybody to practise surgery within a seven-mile radius of the City until he had passed an examination by ten of their number and duly received their license.

Important as this was to become, however, in the history of surgery, it had scarcely meant more as yet to the country at large than the labelling of a familiar body of men—and not a particularly cultured one—with a new title. And it had made very little difference, from a practical point of view, to their general level of efficiency. It was true that, certain by-laws having been abrogated, the study of anatomy had become a trifle easier, and the half-dozen corpses or so, permitted under the old acts, continued to be provided for public lectures. But for the majority of students personal dissection was unknown. And even the accredited professors at the various universities were often com-

pelled, for their scanty material, to rely upon the professional grave-robbers or resurrection-men.

With a few exceptions, therefore, such as Cheselden, the average surgeon remained much as before—a man of whom little was demanded but a certain manual dexterity and a proper respect for his betters. And by no means all of them, as Partridge confided to Tom Jones, were even in favour of the separation. Indeed, as Fielding said, though the surgeons might have gained something, the barbers were 'supposed to have lost very little.' And the 'pretty young fellow,' whom he was obliged to consult as surgeon in the ship that took him to Lisbon, was quite content apparently to have been also employed as steward, cook, and butler.

Such in the main, then, was English surgery, when its future deliverer rode into town—a tawny-headed youth of less than middle height, with a stubborn chin and inquiring eye, reputedly idle, lacking in every grace save a somewhat aggressive respect for truth, and as remote from Chelsea and its polished old squire as the little farm upon which he had been born. This was in 1728, the last of a family of ten, at Long Calderwood, a few miles from Glasgow. And the little house, with its hundred or so acres, upon the road to Hamilton from East Kilbride, was as typical of the countryside in which it stood as of the household that it sheltered. Both Hunter's parents, that is to say, had been of sound stock—ambitious for their children, careful and devout

—his mother the daughter of a Glasgow merchant, who had also been treasurer of the little town, and his father the younger son of a good family, though he had earned his living by commerce and farming.

But neither of them was young. Their children had been many. And although three of them had died before John was born, Janet had by then become a girl of fifteen, Jamie and Agnes were thirteen and twelve, William was ten, Dorothy and Isobel were respectively seven and three, and with Jamie and William destined for the Law and the Church, there had been little enough margin for anything in the shape of luxury. Indulged as he had been, therefore, as the youngest of the family—or so it had seemed to his Spartan brothers and sisters—it was rather in having been permitted to go his own ways than in any concessions to a desire for comfort. Wanting to know, as he said, 'all about the clouds and grasses, and why the leaves changed colour in the autumn,' he had plied people with questions 'about what nobody knew or cared anything about.' And although at the village school he had received some rudimentary education, he had shown no desire to adopt a profession, and even less to become the 'gentleman' that his ancestry was thought to demand. Reluctant as he had appeared, however, to share the family's burdens, he had at least been a witness of its tragedies. And these may have explained, perhaps, if they did not condone, a

certain tenderness on the part of his mother. Thus, before he was fifteen, he had lost his father, and his sisters, Agnes and Isobel. Jamie had died when he was seventeen and still lounging about the farm. And it was not until he was twenty and staying with his married sister, Janet—herself to die in the following year—that he had suddenly decided upon a visit to William, his older and scarcely less famous brother.

Meanwhile William, facing every sort of reverse, had been grimly following his own career. At the age of thirteen he had matriculated at Glasgow University, studied theology for nearly five years, and finally abandoned it as the result of a friendship with a poor but brilliant medical student. This was William Cullen, afterwards the patron of Burns and Professor of Medicine at Edinburgh University, and at nineteen, Cullen having begun to practise at Hamilton, he had gone to live with him as a pupil-assistant. Here he had remained for the next three years—the happiest, as he afterwards said, of his life—and had then, upon Cullen's advice and with the intention of becoming his partner, resolved to equip himself as thoroughly as possible. He had therefore gone to Edinburgh, where he had studied under Monro—the first of the three famous Alexanders, who were to occupy between them, as father, son and grandson, its chair of Anatomy for a hundred and twenty years—and from there to London, weathering a storm at sea of which he has left us a

vivid description. 'The noise was so great,' he wrote, and 'the motion of the ship and hurry of sailors so confounding, and terror and death painted so strong in every face, that I think I have got a sufficient trial of myself in danger.' And looking back, it might well have seemed an omen of what awaited him in the next few years.

He had arrived safely, however, with letters from Cullen to two fellow-countrymen, who received him kindly—William Smellie, the celebrated accoucheur, with whom he had lodged at first as a pupil, and Dr. Douglas, an old and successful practitioner, with whom he had afterwards made his home. Deeply interested, too, in anatomy, he had attended the private classes of Dr. Nicholls—a couple of bodies, surreptitiously obtained, being considered adequate for the whole course—and had become a surgical pupil, thanks to the suggestion of Douglas, at St. George's Hospital. This was one of a group, including Westminster and Guy's, that had come into being since the beginning of the century. And rough as they were, they stood for an opportunity richer than anything to be found in Scotland. Moreover, there was the chance, as he confided to Jamie, that another of his new friends might take him into partnership. And in spite of his father's doubts, Cullen's regrets, and the certainty of a competence awaiting him at Hamilton, William had decided, penniless as he was and entirely

without influence, to try and establish himself in London.

Stoutly as he had trusted, however, in his star, it was certainly not for lack of attendant disasters. He had scarcely arrived in London before he had heard of the death of Agnes—his beloved Nannie, as he had always called her. And he had hardly decided to remain there before he had received the tidings of his father's death also. In the following year, too, he had not only lost his sister Isobel but his friend and adviser Dr. Douglas, as well as one of the prospects, since the partnership had not materialized, for which he had given up the chance of returning to Cullen. A couple of years later, another was to disappear—the possibility of succeeding Dr. Nicholls as a teacher of anatomy—and hard upon this, while he was living with Mrs. Douglas and doing his best for her unsatisfactory son, he had been stricken by the death of her daughter Martha, to whom for some months he had been engaged to be married. Finally he had lost Jamie, considered by his parents to have been the most promising of the family. He had spent most of his earnings—though he cared little for money—in paying the debts of young Douglas. And if he had fought his way at last to success, the price demanded from him may well have seemed enough.

It was at any rate an excuse, perhaps, for a certain tenacity with which he was to guard it in later life.

And he had already proved himself, before the coming of John, to be an adventurer in many fields. At the age of twenty-five he had read a paper to the Royal Society. He had twice been to Paris and once to Leyden. He had been the first to demonstrate by injection the exact course of the lachrymal ducts. And at his class of anatomy, begun when he was twenty-eight, in some rooms that he had hired in Covent Garden, he had enabled his pupils—probably for the first time in England—themselves to dissect the bodies upon which he lectured. Later these lectures, the most renowned in London, were to embrace nearly the whole of the medical field, and they had attracted enough attention, even at the beginning, to have become a profitable source of income. And although, for the present, he was still lodging in Hatton Garden with Mrs. Douglas and her son, he had become a member of the new Corporation of Surgeons, and acted as Surgeon-man-midwife to the Middlesex Hospital.

That was in 1748, William being then thirty, and although, as time was to prove, they had only too much in common, it was almost as a stranger, upon John's arrival, that he found himself regarding his younger brother. From all that he had heard, indeed —and perhaps what he saw—of the rather illiterate youth before him, it might have seemed wiser that he should have remained so, or at least have refrained from coming to London. But he was a Hunter and

had been tempered in the same school. If he had been wasting his time, it was with a broad pair of shoulders. And naïvely as he was hesitating between anatomy and the army, William decided to give him a trial. Taking him into the dissecting-room, he gave him an arm; found to his surprise that he shaped not too badly; and was even prepared to admit, with proper reservations, that he might in time become an anatomist.

So began an association, unbroken for eleven years, with John acting as his brother's assistant. And for the rest of their lives, deeply as it was to be submerged, the bond between them was never really broken. Even at the end, when they had ceased to be on speaking terms—and neither of them would have had it otherwise, perhaps—this was true. And in the meantime there were certain tasks for which his very lack of refinement was an advantage. He was just the man, for instance, to handle the body-snatchers, with whom for some years William was obliged to have dealings. And if he disappeared occasionally at nights, he seemed to be tolerably free from vice.

To his country eyes, indeed, with their passion for everything alive, the lure of the town must have been sufficiently strong—the London of George II. and the wars with the French, of Pitt, the Pelhams and Henry Fox; the elegant London of Walpole and Chesterfield, of which Sir Hans was still eager for

crumbs; the London of the cockpits and the country squires, of Johnson and his amanuenses at Gough Square; of Hogarth's 'Gin Lane' and the hangings at Tyburn; of Wesley, Whitefield, and the first of the Methodists. Engrossing as it was, however—with Peg Woffington at her prettiest and Garrick a beginner at Drury Lane—he had found his vocation, and his nights abroad were never at the expense of the work in hand. Long after William had gone his ways, he would be poring over some problem in the dissecting-room. And in the following spring, when the lectures were over, he became a pupil of the great Cheselden.

This was the Leicestershire man, the friend of Pope and Mead, who was then the chief figure in English surgery, and with the exception of Percival Pott—still in his thirties—the only first-rate surgeon that England had produced. In one particular, indeed—as the deviser of a method for the removal of stone from the bladder—he was without a rival in Europe. And the operation, for which he charged £500, and which he had once performed in fifty-four seconds, was to remain, with scarcely a modification, the classical procedure till the days of Lister. But Cheselden, who was over sixty, was nearing his end. As a patron of the ring and an amateur architect—the designer amongst other things of Putney Bridge and the Surgeons' new hall in the Old Bailey—he had lived a full and hospitable life. And after a couple of

summers spent with him at Chelsea, with a winter in the dissecting-room as William's understudy, John was obliged, Cheselden having collapsed with a stroke, to study his surgery elsewhere. In 1751 therefore—the year in which the brothers lost their mother—he came under Percival Pott at St. Bartholomew's; spent the winter again helping William, who had now taken a house in Covent Garden; and in the following summer, returned to Scotland, bringing back Dorothy, the only sister left.

The three Hunters, the last of their clan, and each an outstanding personality, were thus living for a time under the same roof, and for William at any rate prosperity was assured. The attendance at his classes had increased every winter. His fame as an accoucheur was rapidly growing. And he was still in demand, though inclining more towards medicine, as a careful and able surgeon. At the same time, overshadowed as it was, John's work had not escaped notice. He had been associated with William in demonstrating, for the first time, the exact course of the seminal tubules. Though he lacked his brother's fluency and was never to acquire it, he was able, in his absence, to give his lectures. And in 1753, at the age of twenty-five, he was elected a Master of Anatomy at the Surgeons' Hall, in company with Percival Pott, fourteen years his senior, and later as a surgeon his principal rival.

In this latter respect, of course, he was still unfledged

—a fact of which Pott, perhaps, was not unconscious. And in the summer of the next year, with an eye on a possible house-surgeoncy, he entered as a student at St. George's. This was the summer in which Henry Fielding, about to start on his voyage to Lisbon, and a trifle mistrustful of the captain's 'pretty young fellow,' sent for William to relieve his dropsy. And it was followed, on the part of John, by a winter of research that included a demonstration of the nerves of smell, the discovery of the exact nature of the placenta or after-birth, and the connections in the womb between the mother and the child. Later, or so he asserted, this was claimed by William—or at the best described by him without acknowledgment—and it was to become a reason, if not perhaps the primary one, for the final estrangement between the brothers. But for the present they were still on their usual terms of monosyllabic and friendly regard. And after the briefest of interludes, in which he went up to Oxford, 'where they tried to make an old woman of me,' he said, 'and stuff me with Latin and Greek,' he was back in Covent Garden and elucidating the condition now known as congenital hernia.

This was quickly followed—after six months at St. George's in the resident house-surgeoncy, for which he had hoped—by the brothers' demonstration, in which William had taken the lead, of the absorbent nature of the lymphatics; the removal of William, though he

retained the house in Covent Garden, to a more convenient address in Jermyn Street; the marriage of Dorothy to the Reverend James Baillie, a somewhat unbending Scotch minister—but by whom she was to become the mother of the famous Joanna and the eminent physician, Matthew; and the departure of John, just after the succession of George III., as an army surgeon upon the expedition to Belle Isle.

This was one of the 'diversions'—and not perhaps a particularly brilliant one—of the Seven Years' War, then in progress. And in spite of the ingenuity of its French governor and the patriotism of the garrison ladies—who paraded up and down, we are told, clad in red uniforms, and 'those who had no horses rode on cows'—the little island at the mouth of the Loire was eventually taken at the second attack. For an army of ten thousand perhaps, backed by eight ships of the line, this was not extravagantly beyond expectations. And there were even some, according to a contemporary historian, 'who did not sufficiently estimate the value of the conquest.' But it was ultimately to be included amongst the spoils returned to France in exchange for Canada, and reasons of health, as well as of adventure, may have determined Hunter to take part in its capture. For nearly twelve years, and almost without a break, he had been working either at hospital or in the dissecting-room. He had not long recovered from an attack of pneumonia, his first

serious illness. And the commission that had been offered him, apart from its professional attractions, may have meant a welcome change of scene.

It was at any rate to become the means, by bringing about his friendship with Robert Home, surgeon to the 16th Dragoons—commanded at the time by Gentleman Johnny Burgoyne—of introducing him to his future wife. And if his other relationships were less peaceful, this is scarcely perhaps to be wondered at. Towering as he did over most of his colleagues at the military hospital to which he found himself attached, he considered his chiefs, as he confided to William, to be 'as unfit for employment as the Devil was to reign in heaven.' And since he was seldom at pains to conceal his views, the general result may be inferred.

Neither of the brothers, indeed, could suffer fools gladly or any infringement of their supposed rights. And William, as it happened, was as deeply engaged as John in a typical war with two of his fellow-anatomists. Of these one was Monro—Alexander the second—who was not only claiming the lachrymal ducts but assuming the credit, or so William considered, for the discovery of the seminal tubules. Further, he had not even mentioned, in his treatise on the lymphatic system, the original work of the Hunters, and Percival Pott had been guilty of the same crime in a book of his own upon congenital hernia. A bitter

correspondence was therefore in progress, embellished with the usual invectives, and John at Belle Isle was awaiting the result with an instructed respect for William's ring-craft.

That William won should perhaps go without saying—a verdict that history has since endorsed. And it is pleasant to reflect that, when the battle was over, he was able to regard it with a certain philosophy. 'Anatomists,' he wrote, 'have ever been engaged in contention. And indeed, if a man has not such a degree of enthusiasm and love of the art as will make him impatient of unreasonable opposition and of encroachments upon his discoveries and his reputation, he will hardly become considerable in anatomy or any branch of natural knowledge.' And a few years later, he was referring in affectionate terms to his friends, the Monros of Edinburgh.

Meanwhile John, fighting at closer quarters—and making an experiment or two with hibernating lizards —had managed to become the chief of his military hospital, where he was collecting data upon gunshot wounds. And when Burgoyne's Dragoons, on the outbreak of war with Spain, were ordered to Lisbon in July 1762, John went with them and remained in Portugal till peace was declared in the following spring.

He had thus been abroad for about two years, and although his time had been far from wasted—there is

a characteristic picture of him lying on his stomach at Lisbon and studying the fish 'in a nobleman's garden' —it was to find himself on his return, at the age of thirty-five, almost as poor as when he had left Scotland. Having sunk his arrears of pay in some land at Earl's Court, he had deprived himself of ready money. In his brother's school, since William had been obliged to take another partner, there was no opportunity adequate to his abilities. And as a surgeon, apart from his army experiences, he was lacking in practice and was still without a diploma. On the other hand, William, now a licentiate of the College of Physicians, had securely established himself at the head of his profession. While John was at Lisbon, he had been present at the birth of George IV. and been made Physician Extraordinary to the Queen. His patients, as an accoucheur, ranged from Pitt's Lady Hester to the wife of the rising banker Thomas Coutts. And although he had never married and, in the sense understood by Sloane, took no interest in society, his immediate circle—and in the first case his purse—included such men as Tobias Smollett, Joshua Reynolds, David Garrick, Hogarth, Gainsborough, and Oliver Goldsmith.

The material contrast between the brothers was even deeper, therefore, than before, and totally unenvious as John remained, he had every reason to try and lessen it. Since returning to England—and apart

from the necessity of paying his way and that of his researches—he had fallen in love, a little to his surprise perhaps, with one of the daughters of Robert Home. And different as they were—Anne with her twenty-one-year-old grace, her love of society and fondness for verse, and the bull-necked little surgeon, with his bright eyes, priding himself on his bluntness and his lack of scholarship—she had seemed not unwilling to be courted. In any case it had become a necessity to raise some money. And although for the next four years his history is a little vague, he had managed by the end of them—partly, it has been alleged, owing to a partnership with some fashionable dentists—to gather together the beginnings of a practice, take a modest house for himself in Golden Square, become a member of the Surgeons' Corporation, and a Fellow of the Royal Society, three months ahead of William.

It was not until his appointment, however, in the following year, as one of the surgeons to St. George's Hospital, that his long apprenticeship may be said to have been over, and it happened to coincide with a move on the part of William. This was to the famous house in Great Windmill Street—residence, school, and museum—upon which he had spent many thousands of pounds, and which was to be his home for the rest of his life. And John felt himself able, thanks to the prospect of his new appointment, to take over his brother's house in Jermyn Street. This

gave him the chance, too, of accepting resident pupils, of whom one of the first was Edward Jenner—the founder of vaccination, as we now know it, and perhaps the most intimate of his later friends. And the delaying of his marriage for another three years was probably due to the tragic mishap that, taking a deliberate but misunderstood risk, he had inoculated himself with a disease that made it impossible.

Later this was to account probably for much of his ill-health, although he treated himself with his usual thoroughness. And when he was finally married, at the age of forty-three, it was with an equally typical absence of ceremony. This was just after he had published his first book, his *Treatise on the Natural History of the Human Teeth*, and it was not until the night before that it seems to have occurred to him to advise William of what he was doing. 'Dear Brother,' he wrote, 'To-morrow morning at eight o'clock and at St. James's Church I enter into the Holy State of Matrimony. As that is a ceremony which you are not particularly fond of, I will not make a point of having your company there. I propose going out of Town for a few days; when I come to Town I will call upon you. Married or not married, ever yours, John Hunter.' And it does not appear that William attended.

That was in 1771, on the twenty-second of July, Anne having waited for him nearly eight years, and

difficult as he must have been, she seems to have played her part with a very commendable discretion. Accepting him for what he was—so immersed in his experiments that he would even interview patients with their evidences hanging about him—she fashioned her own social life. On the authority of Madame D'Arblay, who first met her at the Thrales—the Streatham friends of Dr. Johnson—we learn that she was 'extremely pretty and reckoned very ingenious.' One of her poems, *My mother bids me bind my hair*, in its setting by Haydn, was to be popular for a century. And although her husband, inveighing against what he called 'kick-ups,' is reported on one occasion to have cleared her drawing-room, she managed to preserve not only her dignity but his lifelong affection. In letter after letter she is the Anny who joins him in sending greetings, and writing to his brother-in-law four years later, he is 'happy in a wife,' he says, though his children 'are too young to form any judgment of.' These at the time consisted of 'a stout red-headed Boy, called Jock' and 'a weakly girl call'd Mary Ann,' a second son having died, 'and Anny is near her time of a fourth.' And it was only Jock—John Banks, named after his friend Joseph Banks, the naturalist—and the expected fourth, Agnes Margaretta, who lived to survive their parents.

Meanwhile for Hunter himself, and surgery in his person, these had been years of unhurried probation.

Although he was now forty-seven and had read a few papers before the Royal Society, he had published nothing since his work on the Teeth. And apart from his winter evening talks to his Hospital pupils, he had not yet appeared as an independent lecturer. In spite of an income, however, still comparatively small, he had built a house on his Earl's Court estate, sleeping there in the summer—he allowed himself four hours a night—and rising early to attend to his animals. And he had already begun to assemble there much of the material, living and dead, upon which he was to base his life-work. 'I want a crow's nest,' he wrote to young Jenner, back in Gloucestershire as a country doctor, 'as also a magpie's in the branches of the trees where they are built. I want a nest with cuckoo's eggs in it; also one with a young cuckoo; also an old cuckoo. I hear you saying there is no end of your wants.'

Nor was there. 'Cannot you get me a large porpoise?' 'Have you any eaves where the bats go at night?' The demands were endless. And Jenner was not only a source of supply but a fellow-inquirer, if still perhaps a timid one. 'I thank you for your experiment,' wrote John, 'on the Hedge Hog; but why do you ask me a question by the way of solving it? I think your solution is just; but why think, why not try the experiment?' And if the gospel of Hunter could be put in eight words, there it stands in this letter to Jenner.

But for all his industry his collections were outgrowing him, and in 1775—the year in which he began his public lectures—he engaged an artist, one William Bell, to act as a whole-time resident assistant. This was in addition to two of his pupils, his brother-in-law Everard Home and William Lynn. And the standard required of them can best be divined, perhaps, from a further epistle to Jenner. 'I was glad when I heard,' he wrote, 'you was married to a woman of fortune; but let her go, never mind her. I shall employ you with hedgehogs'—and for the happier Jenner there was at least the protection of a hundred miles. It may even have seemed to them too, lacking their master's vision, or not having shared it yet, of the surgery of the future—a surgery to be founded upon, and continually corrected by a first-hand study of the living organism—that all this brooding over birds and beasts was a rather irrelevant occupation. What was the practical use, for instance—though they were presently to see—of studying the growth of the horns of deer, when Percival Pott and others of his contemporaries were reaping in their thousands as operating surgeons?

For the making of money, however, as an end in itself, John cared even less than his brother. And although, during the next few years—and especially after his appointment as Surgeon Extraordinary to the King—his professional income was to double and

treble itself, there was seldom a surplus to be invested. To his house at Earl's Court he added a wing, extended his farm-buildings and planted an orchard. For the harbouring of his leopards and the more dangerous of his pets, he constructed a mound in one of his fields. But the mode of his life remained unaltered. 'Ah, John,' said a friend, 'you are always at work.' 'I am,' he replied, 'and when I am dead, you will not soon meet another John Hunter.' And the claims of his practice, however insistent, were never allowed to encroach upon his hours of research.

Thus, in the same year, and at the age of fifty-two, we find him reading papers before the Royal Society upon subjects so diverse as the 'effect of small-pox on pregnancy' and the 'changes in the plumage of hen pheasants,' as well as the historical paper on the structure of the placenta in which he definitely challenged his brother William. Why he should have done this will probably never be known, since the volume of which he complained—William's monumental *Anatomy of the Gravid Uterus*—had already been published for six years. Moreover in his lectures, and without remonstrance from John, William had persistently claimed the discovery, and had also been credited with it by Haller in his sixteen-year-old *Physiology*.

But there had clearly been some difference between the brothers—William sixty-two now and sated with

wealth—and John, certainly not less obdurate, had evidently determined to carry the war into the enemy's camp. He had publicly announced, therefore, the discovery to be his own—a blow, as he well knew, in William's most sensitive spot. And whether or not he was right—William's reply was somewhat equivocal—the result was typical of them both. Bitterly complaining of his brother's ingratitude, William refused to see him again. And it was not until three years later, when he lay upon his death-bed, that he consented to make an exception. John was then summoned—having tentatively suggested it—but only, as it was to be understood, in a professional capacity. And he was neither present at William's funeral nor was there any mention of him in his brother's will. John, on the other hand—and again in a professional capacity—deemed it his duty, when lecturing to his students, to utter a few words upon the loss sustained by anatomy, and then for a moment, and probably to his deep chagrin, found himself unable to continue his lecture. Overcome with a sudden, and what must have seemed to him a wholly effeminate emotion, he was obliged to turn, we are told, from his audience and cover his face with his hands.

In the judgment of the time, indeed—and perhaps John's own—it was the greater of the brothers that had gone. And although the years to come were to redress the balance, their debt to William remained a

heavy one. In his school at Great Windmill Street—left to his nephew, Matthew Baillie, down from Oxford and beginning to practise—he had set up a standard of medical teaching that was probably the highest yet seen in England. And the museum that he had collected there, at a cost of over £100,000, was to become one of the glories of Glasgow University. In spite of the intolerance, too, of his later years, his personal bequests were generous. To his sister Dorothy he left an income for life and substantial sums to her two daughters. Upon an I.O.U. from Tobias Smollett, he had scribbled a note that it was to be disregarded. And he had left Long Calderwood to his nephew Matthew, who later returned it to his uncle John. But for the rest, and apart from his quarrel with his brother, he had never quite outlived, perhaps, the tragedies of his youth, and 'if I had enough strength to hold a pen,' he said, 'I would write how easy and pleasant a thing it is to die.'

Whether, in like circumstances, the more combative John would have subscribed to this is perhaps doubtful, although oddly enough, when it was repeated to him, it seems to have touched a responsive chord. But moved as he had been by his brother's death, he was at the full tide of his activity. If reparation were due from him, which he was not prepared to admit, it could best be made in the shape of work. And he had already, like William, begun to feel the necessity

for a somewhat larger environment. In 1783 therefore, the year of William's death, he purchased a house in Leicester Square—number twelve, on the east side, next to the house occupied by Hogarth's widow—and another at the back of this, facing upon Castle Street, afterwards incorporated in Charing Cross Road. With his usual recklessness, too, in respect of money—the lease he had bought had only twenty-four years to run—he built a lecture-theatre between the two of them, with a 'conversazione' room leading out of it, and upon the top of these a vast museum, lit from the roof and surrounded by a gallery. He also set up a printing press in the house in Castle Street, and it was from here that he issued in 1786, in a reasonably attractive fount of type, his *Treatise on the Venereal Disease* and his *Observations on certain parts of the Animal Oeconomy*.

These included his original work on the nerves of smell and the structure of the after-birth or placenta; the beginnings of our present knowledge of animal heat and the difference between hot-blooded and cold-blooded animals; an account of the organ of hearing in fishes; a method of artificial respiration; and the first discovery of the power of the gastric juices to digest the stomach after death. And for those who might allege that this was all very interesting but rather to the naturalist than the surgeon, he had already provided, a few months before, a dramatic instance to the contrary. During his study of the growth of the

horns in deer, his attention had been fixed by one of its accompaniments—the ability of the side-vessels, when a main artery was obliterated, to deal with the blood-traffic in its place. But if in deer, he had argued, why not in man? Confronted, as he so often was, by a diseased artery, with yielding walls in a condition of aneurysm, why should the surgeon hesitate to put it out of action by ligaturing it high up where its walls were still healthy? Formerly such a proceeding would have been thought fatal—an interference with the blood-supply to the parts beyond that would inevitably have led to their death. But in many, if not in most cases, as Hunter perceived, there were alternative avenues ready for use. And finally in December 1785, he had successfully performed, for the first time, an operation that was to become the saving of many thousands of future lives.

Brusque as he was, therefore, it was little wonder that he was gathering about him a body of disciples, by whose means and thanks to his inspiration the whole spirit of surgery was to be changed. And it was not only his students but his patients whom he was continually leading back to Nature. Fresh air and exercise, sea-water bathing are continually cropping up in his letters of advice. And he could be infinitely patient in guiding a sufferer to what he considered the waters of life. Having to persuade, for instance, a

recalcitrant farmer to become a teetotaller for the sake of his health—and having been assured that this was impossible owing to the strenuous character of the farmer's existence—he began to discuss the amount of his arable land and the number of horses employed upon it. He then asserted that these were insufficient. And when the farmer agreed that he worked them pretty hard, 'Allow me to inquire then,' he gently remarked, 'what it is you give *them* to drink?'

So insatiable, indeed, was his curiosity that he would spend any amount in trying to satisfy it—he once paid the expenses of a young surgeon to go and observe whales for him in the Greenland fisheries—and although, with the death of Pott in 1788, he became the unrivalled head of English surgery, the immense establishments for which he was responsible more than consumed his income. Thus at Earl's Court, in charge of his animals and gardens, he employed a permanent staff of nine. At Castle Street he kept three resident and nearly a dozen outside workers. And at Leicester Square, apart from his family and usually some half-dozen pupils, his household consisted, we are told, of a butler, a couple of footmen and a couple of coachmen, a cook, a housemaid and an under-housemaid—Little Peggy, 'a great laugher'—and Mrs. Hunter's lady's maid and needlewoman. In the matter of fees, too, he was almost extravagantly generous, frequently returning them where he suspected

poverty; and from authors, artists and ministers of religion he could never be persuaded to accept anything.

Fashionable surgeon, therefore, as he had become—though the legend on his door was still plain John Hunter—he was seldom out of debt, and his crowded days were already drawing to a close. At the age of fifty-seven he had been seized with a heart-attack, from which it took him several weeks to recover. And although, at sixty-two, he was able to succeed Robert Adair—the Robin of the ballad—as Surgeon-General to the army, it was not until he had suffered from a loss of memory that had compelled him to give up his lectures. These he had handed over to Everard Home, who was also assisting him now in his practice. But rest was impossible to him, although he knew very well how precarious his life had become. It was at the mercy, as he said, of any rascal who chose to put him into a rage. And it was at the height of a quarrel at St. George's Hospital—and upon the day that Marie Antoinette perished at the guillotine—that he collapsed and died there, three years later. For so stormy a career it was perhaps an appropriate ending, and he was buried as quietly as he would have wished. Shadowed as the country was by the events in France, his funeral at St. Martin's was almost unnoticed. And it was not until it was discovered there in 1859, by the naturalist Frank Buckland, that the little coffin containing his remains was re-interred at Westminster Abbey.

Even then, perhaps, it was scarcely realized how great had been his services, and at the time of his death he had far too many enemies for a true judgment of his worth. After some demurring, however, on the part of Pitt, the Government agreed to buy his museum, and a small income was thus secured for Anne, who was to survive him for nearly thirty years. As for his children, although his line was to die out with them, his daughter Agnes was twice married, first to James Campbell, afterwards a Scotch baronet, and secondly to Colonel Charlewood of the Grenadier Guards. And the red-headed Jock of his letter to the Reverend James was to serve as a soldier through the Napoleonic wars.

Such was the career that had done more for English surgery, and surgery at large, than any other, and it was to John Hunter, in its modern sense, that it may justly be described as owing its birth. Finding it a trade, he had left it with a philosophy. He had shown it to be a career for the highest type of mind. And upon his immediate pupils, as upon all he touched, he had left the stamp of his own genius. So completely, indeed, has his mode of thought become the inheritance of his successors that it is difficult to imagine the surgery of to-day pursuing its path by any other. And it was only by a spirit overflowing its achievements that such a result could have been brought about. Endued as they had been with it, his disciples were to

carry his tradition into every English-speaking hospital. And it is significant to find that, in the next generation, it was the surgeons rather than the physicians—men such as Abernethy, Astley Cooper, William Blizard and Anthony Carlile—who were to dominate the medical world. Different from each other and from their master, each of them was to be honoured as he had never been, and doubtless they were as alive as had been his foes to his scorns, pugnacities, and occasional coarseness. But it was the little group that had known him best to whom his failings had seemed the smallest—the 'Dear man,' as they called him, whose dreams they had understood, and whose hand was still upon their shoulders.

VII

JENNER

It is not perhaps the least of John Hunter's glories that it should have been a pupil of his—and probably his favourite one—who was to become responsible for leading the world to its first great experiment in protective medicine. Criticized as it was to be, and various as have been the explanations of what undoubtedly accompanied it—the vanishing of smallpox as an endemic disease from every consistently vaccinated country—this much at any rate must be conceded. And it is pleasant, in an age of specialists, to reflect that its author was merely an observant country doctor, with an eye for his crops—he had a farm or two of his own—and a taste for the flute in the winter evenings. Indeed the famous *Inquiry* that ushered in vaccination—less than a hundred pages of large print—is much more like a letter from an intelligent squire than a scientific treatise, as this is understood to-day. And that was one of the charges, amongst many others, afterwards levelled at Jenner's work. Admitting it to the full, however, the majority of his judges have never had a doubt of its essential value. And it is consoling to remember that the study

of immunity—perhaps the most complicated of latter-day medicine—should have owed its birth to the Gloucestershire pastoral that freed the world from small-pox.

Berkeley in the Severn Vale and its surrounding villages, the Ship Inn at Alveston, and Rudhall near Ross—these were the laboratories in which it was cradled. And descended as he was from a prosperous line of land-owning parsons, scholars and sportsmen, Jenner himself was never at a university and seldom for long even in a town. As he confessed at Oxford, when receiving an honorary degree, though most of his relations had been educated there, they seemed to have been 'determined to turn me into the meadows instead of allowing me to flourish in the groves of Academus.' And throughout his life—and it was a fate with which he never quarrelled—he remained the simple countryman that he had been born.

That was on May 17th, 1749—the year after John Hunter had ridden into London—his father, the Reverend Stephen Jenner, being the vicar of Berkeley, some sixteen miles south of Gloucester, and the family into which he was born, the youngest of six, as typical of its kind as that of Long Calderwood. With his roots in the soil for many generations, the Reverend Stephen was a man of substance, a friend of the Earls of Berkeley, whose feudal castle, one of the oldest in England, adjoined the church, the rector of Rock-

hampton—a family living, a few miles away across the fields—and a man of culture who had married the daughter of the Reverend Henry Head, a previous vicar. Unlike Hunter, therefore, and for what it was worth, Jenner had the advantage of an assured position. And although he lost his parents when he was five years old, and his education was of a rustic order, this seems to have been dictated rather by his own bents than any lack of the necessary means.

To some extent it may have been due, indeed, to the solicitude of his guardians—his eldest sister Mary, married to the succeeding vicar of Berkeley, and his brother Stephen, a fellow of Magdalen—that he should not be sent too far from home. And it was probably for this reason that, at the age of eight, it was to Wotton-under-Edge that he went to school. This was the little market-town of which, a couple of centuries before, Linacre's friend Latimer had been the incumbent. And he seems to have become a pupil at Catherine Lady Berkeley's Grammar School, a year older than Winchester and still flourishing. For some reason or other, however, though it had a sound classical tradition, his sojourn there was only brief. He had already begun, we are told, to collect dormouse nests, and was perhaps less amenable to the classics than he ought to have been. And although at Cirencester Grammar School, where he finished his earlier education, he is said to have become more proficient,

it was chiefly for his fossil-hunting on half-holidays that he appears to have been remembered. In any case it seems to have become obvious to his brother Stephen that, in the classical sense, he was not destined to be a scholar. And by the age of thirteen, he had said good-bye to his books and begun his apprenticeship as a country doctor.

This was at Sodbury to Daniel Ludlow, a well-known Gloucestershire surgeon. And it was during the next five years, while he was studying at first-hand the manifold requirements of a general practice, that his boyish attention was first called to a rather curious local tradition. This was to the effect that cow-pox —a sporadic disease affecting the milking herds in certain neighbourhoods—secured the freedom of such human beings as had caught it from a subsequent attack of small-pox. And in eighteenth-century England, as he had already begun to learn, there was no darker medical problem. Varying in malignancy, the country was never free from it, and it was constantly assuming epidemic proportions. In its worst years, and in a population of less than ten millions, it was responsible for a death-rate of some tens of thousands. And the price of recovery—it was largely a disease of youth—was as often as not a lifelong disfigurement.

Familiar as the tradition was, however, to most of the local doctors, none of them, as Jenner found, took

it very seriously, although one or two—and particularly a Dr. Fewster, who had just settled at Thornbury not very far off—were beginning to encounter it upon another and increasingly popular line of approach. This was by way of inoculation of the disease itself—a preventive measure, founded upon the observation that a slight attack enabled a patient to escape a severer one later on. And it was a measure that, in the East, had been known and practised—often as a religious rite—since the beginning of history. Mention of it was to be found, for instance, in the Sanscrit Vedas as performed by Brahmins, with the addition of water from the Ganges. A thousand years before Christ, it had been a custom in China to insert small-pox matter into the noses of children. And as Emanuel Timoni, an Italian living in Constantinople, had informed the Royal Society in 1714, the results in Greece, where it had long been established, appeared sufficiently good to deserve attention. This had been confirmed by the Venetian Pylarini, whose paper Hans Sloane had managed to procure. And with the return from Constantinople of Lady Mary Wortley Montagu, the wife of the English ambassador—Pope's Sappho till she became too candid for him, and the famous 'she-meteor' of Horace Walpole—its first apostle arrived in England.

Thanks to her advocacy—she had had her own children inoculated—and in spite of clerical opposition,

a beginning had been made. Half a dozen criminals and the same number of charity children, duly rewarded, had been successfully experimented upon. An enthusiast at Leeds had embarked on a long series —a hundred and eighty-two cases, with only two deaths. And after consulting Sloane, favourable but non-committal, the Royal Family had decided to set an example. Richard Mead, even weightier than Sloane, had become its enthusiastic supporter. And in 1754, when Jenner was five years old, the Royal College of Physicians had formally blessed it.

Valuable as it was, however, it was beset with grave disadvantages. There was always the chance, if not a very imminent one, of the inoculated person succumbing to the disease. The subject, during the illness, was highly infectious and a possible source, therefore, of danger to others. And although, thanks to segregation and the modified technique of such men as Robert Sutton and his son Daniel, these particular perils had been reduced, they had not been entirely removed. The whole operation, too, with its preparatory régime, occupied a period of several weeks. And for this reason alone it could scarcely have commended itself to the bulk of a busy and uneducated people. But it had at least seemed to offer a ray of hope. Most civilized countries had begun to adopt the practice. And it was in a house at Buckover, taken for the purpose of inoculating patients by the Sutton

method, that Fewster of Thornbury had also become interested in the local belief with regard to cow-pox.

This was because certain patients whom he had failed to inoculate, had casually told him that they had suffered from it. And he had subsequently found—though without attaching much importance to the matter—that many of his failures gave a similar history. But he had mentioned it to his friends, some of whom used to meet at the Ship Inn, Alveston, for medical discussions. And indeed Dr. Peachey, the historian of the Hunters, is inclined to suppose from recent investigations that it may have been Fewster from whom Ludlow's young apprentice gleaned his first knowledge of the subject.

Fewster was far too busy, however, fighting the battle of inoculation to concern himself very deeply with the question of cow-pox. And for Jenner there was no opportunity as yet, though it remained in his mind, of pursuing the subject further. Presently he might return to it. But his object at the moment was to qualify himself as fully as possible. And upon his arrival at Jermyn Street, in his twenty-first year, to become a pupil of the great John Hunter, he was to find as much work thrust into his hands as the most gluttonous could have desired. With the return of Captain Cook, too, eighteen months later, from the first of his South Sea explorations, he was chosen to

assist Joseph Banks—the future President of the Royal Society—in preparing some of the spoils. And he shaped so well at the task that he received a proposal to join the second expedition. But his Gloucestershire soil was too strong for him. He had been absent from it for nearly three years. And after he had returned to Berkeley to live with his brother Stephen, not even Hunter could lure him away from it.

Meanwhile Stephen, now a bachelor of forty-one with a comfortable income, had taken Holy Orders, being the curate of Stone, a little to the south of Berkeley on the main road from Gloucester to Bristol, and the absentee rector, after the custom of the day, of Fittleton near Netheravon in Wiltshire. He had also for some years held the family living of Rockhampton, but had just resigned this to his second brother Henry—the vicar of Little Bedwyn on the fringe of Savernake Forest and destined to be the father of ten children. Of Jenner's other sisters, too—although they had both married and Sarah had migrated to Birmingham—Ann was living at Eastington, a neighbouring village, of which her husband was the rector. And his old Aunt Deborah, in her seventieth year, was still presiding over the little farm, waiting to be re-explored—it had been the paradise of his boyhood—with the educated eyes that he had brought back from London.

He had not only come back, therefore, to the country

of his heart, but to a large and intimate family circle. And flattering as it was, two years after he had done so, to have received Hunter's offer—it was nothing less than a partnership with the great man in a projected school of anatomy and natural history—he was already too content with the life he was living willingly to exchange it for any other. Riding upon his journeys —and with a manor-house at the end of most of them, only too anxious to entertain him—it was 'the valley and not the mountain,' as he said, that he had chosen. And it was a valley still untouched by the industrial dawn that men in towns were already beginning to talk about. It was true that coal and iron had been married for the first time somewhere in Scotland by a Dr. Roebuck, and that Mr. Peel was extending his vast works for the spinning of cotton and the printing of calico—that Mr. Josiah Wedgwood, in a neighbouring county, was developing new processes for the making of pottery; that Sarah's Birmingham had more than a hundred streets in it, and a certain Mr. Watt had just patented a steam engine. But the country roads, though people had begun to grumble about it, remained for the most part covered with grass. Not for another decade or so would there be Government coaches carrying the mails at twelve miles an hour. And it was still possible as he rode along—a habit to be watched, however, as it appeared to be growing on him—to compose a verse or two

appropriate to the hour, or slip from his horse to peep into a nest.

Thanks to his abilities, too, his London prestige, and his social position as a country gentleman, he was quickly obtaining as many patients as were compatible with his other tastes. And both to his daily work as a general practitioner and his observations as a naturalist, he was bringing the freshness of outlook that was the inheritance of all John Hunter's pupils. While still in the twenties, for instance, he had come to the conclusion—long since endorsed by other observers—that many cases of heart-failure of a particular kind were due to disease of the coronary arteries supplying the heart-muscle. And casually as he was to mention it in a private letter—deduced from what he had noticed in a couple of post-mortem examinations—he may well have been the first, though he never published it, to have made the observation.

Although he had refused fame, therefore, at the price of returning to London, he was rapidly acquiring it in his own district. He was once summoned to Gloucester to perform an emergency operation in the absence of the regular surgeons. And he had not only become the leader of the little society that continued to meet at the Ship Inn, Alveston, but he had founded another—he called it the Medico-Convivial—that foregathered at Rodborough near Stroud. To the end of his life, indeed, he believed in a good dinner, followed

by a comic song or two, as a prelude to debate. It was never difficult to detain him, after seeing a patient upstairs, for a duet in the drawing-room or a toast in the hall. And long after midnight he was to be met upon the roads, accompanied by friends loth to leave him—a robust little figure in the shiniest of boots, immaculate buckskins and a yellow-buttoned coat, with a silver-handled whip, and a chubby, good-tempered face under his broad-brimmed hat.

Such at any rate was the picture that seems to have presented itself to young Edward Gardner—afterwards one of his greatest friends—hurrying from his door at Frampton-on-Severn on learning that Mr. Jenner was upon the green. And he was clearly well-known enough, though scarcely more than thirty, for it to have been a red-letter day in the young man's life. Later Gardner himself was to attain a certain celebrity as a rather indifferent but voluminous poet, a shrewd enough critic to divine the greatness of Burns, and a companion for a time of the unfortunate Chatterton. And it was to Gardner, a few months later, as they were riding on the Bristol road, that Jenner confided an important secret. It was not to be brought, he said, 'into conversation, for should anything untoward turn up in my experiments, I should be made, particularly by my medical brethren, the subject of ridicule.' But he had again been considering the problem of cow-pox, in the protective value of

which he was more than ever convinced. And he was planning a series of investigations, 'which I firmly believe will prove of essential benefit to the human race.'

Countryman as he was, however, and fond of his leisure—and probably well aware of the caution required—it was not for sixteen years that Gardner was to hear from him the final result of his experiments. And meanwhile it was in other fields that his friends in London were remaining aware of his existence. For Hunter he was making observations on the temperature and digestion of hibernating animals. For Joseph Banks he was watching the effects of certain agricultural manures. And for himself he had been unravelling one of the secrets in the early life of the cuckoo. Hitherto it had been supposed that the young cuckoo, on being hatched in another bird's nest, had obtained possession of it, owing to its greater size, by overlaying the remaining fledglings—and that it was the mother-bird who had been responsible for removing her dead offspring. But Jenner, by careful field-work, had shown this to be wrong. It was the young cuckoo, he said, that, placing its broad back beneath its companion birds or eggs, deliberately hoisted them to the edge of the nest and then tipped them over. And he was elected to the Royal Society in 1789, after his paper had appeared in the *Transactions*.

By present-day standards it was rather an ample

reward, perhaps—though Hunter and Banks had other evidences of his worth—and the paper itself was afterwards to be quoted as a typical instance of Jenner's untrustworthiness. In his attack on vaccination, the learned Charles Creighton refers to its palpable absurdity. And even Sir Norman Moore, in the *Dictionary of National Biography*, charitably supposes it to have been an invention of Jenner's young nephew, who was then his apprentice and had been delegated by his uncle to watch the nests. But Jenner was right. The process he had described has since been observed by a score of naturalists, and has even been photographed and placed on the screen to his own and Henry's justification.

Not that Henry—he was the third of the six sons of Jenner's brother at Little Bedwyn—was perhaps as intelligent as his uncle would have liked, though they were to remain associated for the rest of their lives. Even at fifty—or so Jenner was good-humouredly complaining—Henry had 'not yet begun to *think*.' And 'though his mind is stored,' he wrote in 1789—when Henry, at twenty-one, was beginning to help in the practice—'with ideas that do him the greatest credit, yet his general appearance and manner is so very *fifteenish*, that a poor mortal on the bed of sickness will hardly look up to him with that eye of confidence and hope that might safely be placed in him.' But Henry, like his younger brother George—also a

doctor, though he took Holy Orders—was to be of material help to him in the cow-pox research that now increasingly occupied his mind. And when, at the age of forty-three, on becoming an M.D. of St. Andrews, Jenner decided to abandon surgery, it was probably upon Henry that the greater part of his uncle's practice in this respect devolved.

Meanwhile, in his thirty-ninth year, Jenner had married Catherine Kingscote, a member like himself of an old Gloucestershire family; Hunter had become the godfather of their eldest son, born ten months later in 1789; and the baby Edward, who had been inoculated with swine-pox, had satisfied his father by refusing to take small-pox. Indeed for many years, and perhaps to the end of his life, though the theory was dropped for practical purposes, Jenner believed that swine-pox and a disease of horses' heels—popularly known as 'grease'—were manifestations, just as he held cow-pox to be, of the virus producing small-pox in human beings. And he had already discussed his interpretation of cow-pox—generally accepted in later years—with Hunter and Home and a few of his London friends during a visit to town in the year of his marriage.

With the possible exception, however, of his contemporary, Henry Cline, who had become a surgeon of St. Thomas's, none of them had been enthusiastic. It was a subject to which Hunter, catholic as he was,

could never be persuaded to pay much attention. And his first tentative paper on the subject, written a few years later—he had nearly succumbed to typhus in the meantime—seems to have been returned to him, if it was not officially rejected, by his advisers within the Royal Society. But in his leisurely way he refused to be discouraged. If, as he believed, the protection conferred by cow-pox was no less powerful than that resulting from inoculation, then its advantages, could it only be made practicable, would be clearly overwhelming. Cow-pox as a disease was never fatal. The indisposition produced by it was only slight. It almost was non-infectious except by actual contact. And it was all over within less than a fortnight. The paper was put aside, therefore, until he had collected further data. And it was not until May 14th, 1796—a day that was to become an annual festival in Berlin—that he succeeded in inoculating with true cow-pox, or in other words 'vaccinating,' a boy named Phipps. The material used for this he had taken from a cow-pox pustule on the hand of a dairymaid, Sarah Nelmes—as Gloucestershire as himself; there had been a Nelmes amongst his own ancestors, and a Nelmes had once been mayor of Wotton-under-Edge—and on July 19th, remembering their long-ago talk, he sat down and wrote to Edward Gardner.

'As I promised to let you know,' he said, 'how I proceeded in my inquiry into the nature of that

singular disease the cow-pox, and being fully satisfied how much you feel interested in its success, you will be gratified in hearing that I have at length accomplished what I have been so long waiting for, the passing of the vaccine virus from one human being to another by the ordinary mode of inoculation. A boy named Phipps was inoculated in the arm from a pustule on the hand of a young woman, who was infected by her master's cows. Having never seen the disease but in its casual way before—that is, when communicated from the cow to the hand of the milker—I was astonished at the close resemblance of the pustules, in some of their stages, to the variolous (small-pox) pustules. But now listen to the most delightful part of my story. The boy has since been inoculated for small-pox, which, as I ventured to predict, produced no effect.'

Such was the experiment that, within a dozen years, was to have established vaccination all over the world. And although, in actual precedence, it may not have been the first, it was destined to become the classical example. For Jesty's attempt—he was a West Country farmer who had given his family cow-pox twenty years before—had been far too unpleasant in its results to have encouraged repetition. And Fewster, who may have anticipated Jenner by a few weeks, continued to prefer inoculation. It remained for Jenner, therefore, to pursue his researches alone,

though 'with redoubled ardour' as he told Gardner. And handicapped as he was, during the next few years, by the disappearance of cow-pox from the local dairies, he set about preparing the little volume in which he was to publish his results.

This was the *Inquiry*—to give its full title—*into the Cause and Effects of the Variolae Vaccinae, a Disease discovered in some of the Western Counties of England, particularly Gloucestershire, and known by the name of the Cow-pox.* And the manner of its birth was as characteristic as had been the gathering of its contents. The manuscript was first discussed—doubtless after dinner—with Gardner at Frampton and Hicks at Eastington, and was then solemnly revised—doubtless after another—at the manor-house of Rudhall, near Ross. This was the thirteenth-century home of Thomas Brereton—a convivial soul, the son of a local parson, who had married its heiress, the last of the Westfalings, and added her surname to his own. And it was here, under the presidency of the squire—a friend also of Nelson and the Hamiltons—and in the presence of Hicks, Mr. Paytherus, and the Reverend Dr. Worthington, that the *Inquiry* was completed. It was then accompanied to town—Jenner's second and youngest son having been vaccinated in time to be included—by Jenner, his wife, and their daughter Catherine. And it was ultimately published there in June 1798, Messrs. Sampson and Low having been its printers.

As for the book itself, it was an exposition of twenty-three cases, or groups of cases, most of whom had either had cow-pox in the natural way or been vaccinated like the boy Phipps, and in whom subsequent inoculation or exposure to infection had shown an immunity from small-pox. That there were not very many of them Jenner was ready to admit—it was a fact that his critics at once pointed out—but he had no reason to complain either of the book's reception or the practical results to which it led. It was true that, from the first, it was to find opponents such as old Dr. Ingenhousz, who happened to be staying in England—the distinguished pioneer, with the help of Maria Theresa, of inoculation in Austria—and that he had not succeeded, during his visit to London, in persuading anybody to be vaccinated. But Cline at St. Thomas's, then at the head of his profession, vaccinated a boy there, a fortnight after he had left, and writing to Jenner early in August, was evidently impressed by what he had observed.

'The cow-pox experiment,' he said, 'has succeeded admirably. The child sickened on the 7th day, and the fever which was moderate subsided on the 11th day. ... I have since inoculated him with small-pox matter in three places, which were slightly inflamed on the third day, and then subsided.' And he added that, in his opinion, 'the substituting of the cow-pox poison for the small-pox promises to be one of the

greatest improvements that has ever been made in medicine.' Equally prompt, too, in supporting the new method was the famous physician, Dr. Lettsom —the Quaker philanthropist who had helped to found the Royal Humane Society and the Royal Sea Bathing Infirmary at Margate. And within a few months, so instant was the problem, large-scale experiments were everywhere taking place.

That some of these failed was, of course, inevitable, the reason in most cases being obvious—an unfamiliarity with cow-pox itself, whereby the source of the lymph was other than it was supposed to be, errors in technique, and a too early or even simultaneous exposure to small-pox. Everything had to be learned, too, about methods of despatch and the valid life of the material used. And as experience was to show, the protection conferred tended to decrease with the passing of years.

But the successes, as he had hoped, far outweighed the failures, not only in England but abroad. At Tusmore in Oxfordshire, within a few months, and in the presence of various professors amd local doctors, over three hundred persons submitted themselves to vaccination. And of the hundred and seventy-three of them who were afterwards inoculated with small-pox, not a single one took the complaint. In each of the next three years, therefore, he was able to publish the results of further extensive observations.

And in spite of the help of his nephews, Henry and George, the demands of his correspondence became overwhelming. In fact, as he was to write a year or two later, 'I am at least six hours daily with my pen in my hand, bending over writing paper till I am grown as crooked as a cow's horn and tawny as whey-butter.'

That was in 1804, the year before Trafalgar, and although the *Inquiry* was still only six years old, the measures that it advocated had become a commonplace wherever a courier or a boat could reach. Thus in 1799 De Carro of Vienna had written imploring him for some more lymph, and Professor Waterhouse, who had received a copy from Lettsom, had called the attention of America to his pamphlet. In 1800, under the chairmanship of Lord Petre, the Cow-Pock Institution had been founded in London; the *Inquiry* had been translated into French and run through three editions in less than eight months; and a missionary schoolfellow, with whom he had always kept in touch, had begun to vaccinate in Newfoundland. In 1801, under Government auspices, a couple of doctors had sailed to the Mediterranean, vaccinating the fleets at Gibraltar and Malta, and civilians in Palermo, Naples, and Egypt; and Lord and Lady Elgin, with Dr. Scott, had travelled about Greece for a similar purpose. In 1802, 'for the Extermination of the Small Pox,' the Royal Jennerian Society had begun its operations. And in 1803, it had been able to an-

nounce, at a dinner given to him upon his birthday, that it had already distributed nearly twenty thousand charges and vaccinated some twelve thousand persons.

Little as he had sought them, too, honours of every kind had been pouring themselves upon him. The gentlemen of Gloucestershire had given him a service of plate, the Empress of Russia had sent him a ring. Upon a medal presented to him by the surgeons of the fleet, Apollo was offering a vaccinated seaman to Britannia. Diplomas and addresses had arrived from Massachusetts, Paris, Göttingen, and Madrid. He had received the freedom of London in a gold casket and become a freeman of Edinburgh and Dublin. And for the losses he had sustained, owing to absence from his practice, he had been awarded a grant of £10,000. Later this was to be supplemented, in recognition of his services, by another of twice the amount. And it was generally recognized that, if he had wished, his discovery might have yielded him a vast fortune. But his income had been sufficient, as he told Cline, who had urged him to settle in London and earn £10,000 a year. And although he had considered it his duty some years later, for the sake of his family, to try and do so, he had promptly discovered—a little to his relief, perhaps—that London was no place for him, and packed up again.

It was back at Berkeley therefore that, at the age of fifty-five, he sat poring over his letters—the only man

in England whose signature under a testimonial was a sufficient passport throughout Europe. And how little he had been changed by his world-wide celebrity the occasion of his birthday was to prove. Owing to his wife's illness—she had never been strong, and was now a permanent invalid—he was unable to be present, as he had been the year before, at the Royal Jennerian celebration. But he had no intention, as a letter remains to show, of permitting the day to be unobserved. Collecting some of his old companions at the Crown and Anchor, he regaled them with roast beef and 'good October,' with bumpers of milk punch for the final toasts, drunk to the 'friends of humanity.' And but for the indisposition, as he tells us, of his 'poor wife,' they would have roared 'like bulls.'

Indeed in his everyday habits, as he complained to Gardner, he remained as obstinately '*cottagish* as ever.' And although it became his custom, in the next few years, to practise at Cheltenham during the season, and compelled as he was at times to go to London, he was seldom at his happiest away from Berkeley. And after the death of his wife in 1815, he could never be persuaded to leave it. By then he had lost his eldest son and his beloved sister Mary—his brothers had died several years before—but many of his friends were still about him, and the younger generation was growing up. In his home at the Chantry—the present vicarage—a pleasant old house next to the

church, Robert and Catherine, his remaining children, were making a life of their own. Henry, a widower now—but still somewhat his uncle's butt—had a family of three, Stephen, Susan, and Caroline. And his nephew, William Davies, had become the rector of Rockhampton and perpetual curate of Stone.

With Gardner and Hicks, too, and a few choice spirits, he had formed a little club at Frampton-on-Severn, to dine at the Bell and climb Barrow Hill, with the peaceable Severn broadening below it. And if, as he had grown older, he had become a little intolerant towards the enemies of vaccination—a little inclined to talk of ingratitude—its victory, as he realized, had been won. Against the dark background of the Napoleonic Wars, as the Duke of York had reminded the Royal Jennerian Society, it had spread from Greenland to the Cape of Good Hope, from the Mississippi to the Ganges. In the year of Corunna, Dr. Sacco, an Italian, had reported that, since the beginning of the century, he had personally vaccinated six hundred thousand people, another seven hundred thousand having been vaccinated by his deputies. Dr. Balmis of Spain, in a three years' tour, had become its ambassador to Spanish America. The Royal Jennerian Society had been absorbed into the National Vaccine Institute under Government auspices. And in Sweden, Denmark, and Bavaria, it had already been made compulsory.

In spite of his grumblings, too, in a letter to Paytherus, that envy of himself was an obstacle to the cause, there had been no slackening in the tide of honours, gifts, and other distinctions. To the city freedoms that he already possessed, those of Liverpool and Glasgow had been added. From some North American chiefs, he had received a belt of wampum, and £6,000 from the Europeans in India. He had been to Oxford to receive his M.D. And in 1814, on his last visit to London, he had been presented to the Czar and his sister, the King of Prussia and General Blücher.

But he had had his surfeit of official entertaining. And although he had met or corresponded with everybody of his time—Coleridge at Hammersmith, working for the *Courier*, Humphry Davy, his 'mind all in a flame,' Fox at Cheltenham taking the waters, and Fox's Lady Crewe in her villa at Hampstead—he was content, at sixty-six, to have said good-bye to them and busy himself with affairs nearer home. There was his nephew George, a good fellow, for whom he must use his influence to obtain a living. There was poor Phipps, fallen on evil days since he had made history with Sarah Nelmes, for whom he had built a cottage and provided a garden suitably adorned with Chantry roses. There was Worthington, depressed by this new fellow Malthus, the gloomy descendant of the old Pall Mall apothecaries, to be stimulated by an inquiry after his potatoes, and a reminder that the

skies were 'filled with Benevolence.' And in his little summer-house near the church wall—beginning to decay now above the vicarage rabbits—he was making it a practice, every afternoon, to vaccinate the villagers for nothing.

If he were left alone, therefore, as he sometimes was, with Catherine paying visits and Robert away shooting, there was plenty to be done, what with his seat on the Bench and the other young people that came to the house. Henry's Stephen, for instance, was a promising artist, upon whom he intended to keep an eye, although he was 'well aware of its being a wretched profession for a man to get his bread by.' And if, at seventy-two, as he told his friend Baron, he was beginning to feel old and full of complaints, he was at least able, or so it would seem, to take an objective view of the proceedings.

'Time says,' he wrote—Baron was practising at Gloucester—'"You shall have diseases." "Very well, Time," say I, "we'll not fall out about that." Yet I must confess to you that the other day I would have lost some blood.... "Henry," said I (to Henry Jenner), "I wish you would cupp me." "That I would," said he, "but I have lost my glasses." "Well then, you must bleed me in the arm." "Yes, but Stephen has broken the points of all the lancets or rusted them." "Get some leeches then, and put a good cluster of them on each of my temples." "That

I would, but I have not one in the world; they all died in the last hard frost." Thus, my dear Doctor, am I situated worse off by far than the Parish Pauper' —from which it would appear that the long-suffering Henry was still being cast for his usual rôle.

In spite of Time, however, and his nephew's alleged negligence, he was able to report, a couple of months later, that he was walking 'two miles before dinner, and a pretty long see-saw walk after.' And when he died from an apoplexy, early in 1823, he was within sight of his seventy-fourth birthday. By then, it was true, Catherine being married, he had begun to breakfast a trifle later. But he was pottering about Ham, a neighbouring village, buying fuel for its poorer inhabitants, and criticizing the last picture in Stephen's studio up to the moment in which he was stricken. And it was only congruous that, in the end, though Westminster Abbey was ready to receive him, he should have travelled no further than across his garden to the chancel of Berkeley Church.

VIII

JAMES YOUNG SIMPSON

JENNER was sixty-two when there was born at Bathgate, eighteen miles from Edinburgh on the coach road to Glasgow, the small boy who was destined to lift from humanity another of the terrors with which it was beset. Though he was not the actual sponsor of anæsthesia—the first great gift to mankind of American medicine—he was to be its chief protagonist in the Old World, the pioneer of its use in midwifery, and the discoverer of chloroform as a practical anæsthetic. He was also to become the leading authority of his age in the neglected field of diseases peculiar to women. And since he had achieved this while still in the thirties, and the whole of his life-work at fifty-eight, it was not uncharacteristic, perhaps, that he should have been born before the village doctor had time to get there.

That was on June 7th, 1811, at the lowest ebb of his family's fortunes, George III. being upon the throne, with Mr. Perceval as his chief minister, and the legendary Napoleon straddling across Europe, with Wellington in Spain his only challenger. As for

Jenner, he had reluctantly arrived, or was just about to arrive, on a visit to London. His friend Matthew Baillie, the Hunters' nephew, now a man of fifty, was practising in Grosvenor Street. The great surgeons of the Hunterian succession were at the height of their worldly prosperity—Sir William Blizard, the last of the coffee-house consultants, and the founder of the London Hospital Medical School; Cline in Lincoln's Inn Fields, almost the same age as Jenner, but still earning his £10,000 a year; and Astley Cooper, at his house in New Broad Street, making more than both of them put together.

Later, if he had cared to, and come to London, Simpson himself might have outstripped them all. But at the moment of his arrival—his father, after a series of mishaps, had started a little baker's shop in Bathgate—the total resources of the four-roomed cottage amounted to eight shillings and three-pence. And he was the last-comer in a family of eight, of whom six others were still living. These were Thomas and John, nineteen and seventeen respectively; Alexander or Sandy, as he was called, a boy of fourteen; the eleven-year-old Mary, his only sister, and David and George, who were seven and four. And it was fortunate, both for themselves and the young Jamie, that they had a mother of exceptional ability, relations and friends, who were able to help her in meeting the more immediate of their debts, and an

inherited fund of determination from sturdy ancestors on both sides.

Indeed, their mother's great-grandmother, as they were proud to remember, had been a Wardrop of Cults, and her mother a Cleland, in whose veins ran the blood of William Wallace. And if her father, John Jarvey, had been no more than a local farmer, the Jervays or Gervaises, from whom he had sprung, had been a respectable Huguenot family, while everybody in Bathgate knew her old uncle George, the landlord of the Brewery Inn and a notable antiquarian. Rather than make terms with their religious oppressors, the Gervaises had exiled themselves from France, and there was a moss-trooping legend amongst the Simpsons, together with a wholesome respect for the powers of darkness. Upon his little farm, a couple of miles away, their grandfather Alexander, now eighty-six, had never finished his furrows but in a half circle, as a precautionary measure against the aim of witches. And their uncle Thomas, upon retiring to a farm of his own after a successful career as a distiller, had walled in some ground—of no great agricultural value—as a prudent tithe to the Devil.

This was the uncle with whom, after a desultory life, beginning with an apprenticeship to a baker, their father had once been a partner in a neighbouring distillery. But Thomas had moved elsewhere, wisely for himself, and the enterprise had ended in disaster.

The laird of Balbardie, the principal local landowner, had refused to make desirable alterations. With the continuance of the war, the price of corn had steadily risen to prohibitive levels. And the new excise laws had been a handicap that he was unable to surmount. An attempt at brewing had been equally unsuccessful. He had failed in an effort to become a manufacturing chemist. And finally, with his wife and six children, he had returned to the trade of his youth, the room dedicated to the shop serving in addition as kitchen, parlour, and bedroom.

With the birth of Jamie, however, or perhaps because of it, the Simpsons' fortunes began to mend. In the little weaving town, as it then was, with its thatched cottages and winding streets—with its hard-drinking, high-thinking, industrious and argumentative population—allies were at hand in their struggle for existence. Mrs. Simpson, with the consent of her husband, who had realized his limitations, assumed the helm. The house of Balbardie gave them its custom—Jamie, when he was old enough, sometimes delivered the bread there. And thanks to the brothers' toil, under the tuition of their father, the Protean labours of their mother, and a common exchequer, from which it was a point of honour only to draw for absolute necessities, it became possible at last to move higher up the street into a slightly larger and more dignified house.

Meanwhile Jamie, almost as broad as he was long, with his comical great head and serious eyes, was already being singled out, after the Scotch fashion, as the lad to be educated by the rest of the family. For the older boys, whatever may have been their dreams, this was now too late and the emergency too pressing. But Jamie from the beginning—George had died as a boy of seven—had been the 'wise wean' of the household. And after their mother's death, when he was nine years old, Mary and her brothers, and particularly John and Sandy, brooded over his career with an anxiety that even included the way in which his hair was cut. At any rate Sandy found himself obliged to rebuke a barber, who had shorn Jamie's locks a thought too closely—'the callant had suck a muckle head,' was the unfortunate man's excuse, 'that I was doin' my best to mak' it respectable' —and the same stern eye was kept from the baker's shop upon those who had been privileged to instruct him. No less important than the punctual delivery of rolls, fresh from the oven, for the Balbardie breakfast, was every detail of the wise wean's equipment for his own and the family's future honour. And this may well have been the reason for much that, in later life, was to antagonize his rivals. In his naïve pushfulness and self-confidence he was not merely the vicar of his own ambition but the ambassador of Sandy and John and Mary, and the older Mary who had worn herself

out for him. And behind them were the baker's shop in its narrow hill-side street, and other bakers' boys, perhaps, of whom he was the herald, tracing their first letters, as he had traced his own, through the flour that had been sprinkled upon the counter.

He had been four then, and learning from 'Timmerleg' Henderson, a local philosopher who had lost a limb. But he was already established at the Bathgate school when his elder brothers began to shepherd him. And it became an understood thing that he was to be allowed certain liberties, of which the others had been deprived. If the work demanded it, of course, he had to do his share of foot or pony-back deliveries, or help for an hour or two on his relatives' farms at putting up the hay and binding sheaves. But for the most part he was free to follow his own studies, to discuss archæology with his great-uncle George—to tramp, on one occasion, before he was ten years old, the eighteen miles into Edinburgh—and to sharpen his wits on the neighbours' disputes, if not to share in their usual solace. Permissible for others as this might be—or so Sandy assured him with due solemnity—for Jamie it was forbidden, 'it would break all our hearts, and blast all your career.' And there was already a schoolfellow of his, John Reid, only two years older than himself, studying in Edinburgh, and actually living with Mr. MacArthur, who had once been a teacher at the Bathgate school. But would it

be possible for Jamie to go there too? Well, without prejudice, Sandy thought that it might. And when, a few months later, there sauntered into the playground the resplendent figure of John Reid—'wearing,' as Simpson has told us, 'an actual long-tailed coat and sporting a small cane'—there were no further doubts as to his destiny. It was Edinburgh or nothing, whatever he might study there.

Probably at the moment, indeed—it was in the autumn of 1825, at the age of fourteen, that he first took up his abode there, 'very very young,' as he afterwards said, 'very solitary, very poor and almost friendless'—the northern University, for sheer learning, was second to none in Great Britain. In spite of the bitter feuds between its professors and the curious fashion in which a majority of them were appointed by the Town Council, consisting chiefly of tradesmen, it was the centre of a life that had never exerted more influence upon every field of contemporary thought. Russell and Palmerston, both premiers of the future, had been amongst its undergraduates since the beginning of the century. 'It laid the foundation,' said Palmerston, 'of whatever useful knowledge and habits of mind I possess.' And clustered about it, there was a little society as cultured—and conscious of it—as any in Europe.

In the person of Sir Walter, now the squire of Abbotsford and shadowed as he was by impending

disaster, it had produced and was still paying homage to the first novelist of the day. In the *Edinburgh Review*, to which the young Mr. Carlyle had just begun to contribute, it was providing for the Whigs the most erudite if not the most powerful of their organs, and in Christopher North—thanks to the Town Council, a somewhat surprising Professor of Moral Philosophy—an equally vigorous Tory champion in the younger columns of *Blackwood's*.

For the fourteen-year-old Jamie, therefore, with his country clothes and the Bathgate boots with the tacked soles—a little too loud for complete gentility, as he afterwards discovered when he began to practise—there was some excuse, perhaps, if he failed at first to attain the necessary standard of concentration. Surrounded as he was by the glories of Edinburgh, and studying arts at its University—sharing a room, too, at three shillings a week, with John Reid and Mr. MacArthur—he was evidently a trifle slower than Mr. MacArthur would have liked in acquiring the proper habits of an undergraduate. As the latter was compelled to inform Sandy, 'I can now do with four hours' sleep. John Reid can do with six. But I have not been able to break in James yet.' And this may have contributed to the lack of distinction with which he returned to Bathgate in the summer.

Prolonged as were his slumbers, however, for one so young, he was duly promoted in the following

autumn to the senior classes in Greek and the humanities. And he was also successful in obtaining the Stuart Bursary of £10 a year. But there were other factors that made it a little difficult to keep his attention on his own subjects. Both his companions were studying medicine with a fierce and infectious ardour. The books upon which they drugged themselves, from the little that he had seen, seemed far more interesting than his own, and the world from which they returned to the Adam Street lodgings an infinitely more exciting place to live in. There was Robert Liston, for instance, the first surgeon in Scotland, although he was still only thirty-four—a son of the manse, who had been a pupil in London of such masters as Blizard and Abernethy—but who had been expelled from the Royal Infirmary after a soul-stirring battle with the tyrants in charge. So great, however, had been his success, both as an operator and independent teacher, that a couple of years ago they had had to take him back. And he was now reigning there in state.

Then there was the redoubtable Syme, five years younger, who had once been his friend but was now his enemy—the son of well-to-do parents, who had already had a career even more brilliant than Liston's. Thus at seventeen—and he might have made a fortune by it—he had discovered the method of dissolving indiarubber, whereby Mr. Mackintosh, who had taken

out the patent, was producing the waterproof coats to which he had given his name. But for Syme that had been merely a *jeu d'esprit*. At the age of nineteen he had become Liston's demonstrator, and at twenty-four a Fellow of the Royal College of Surgeons and, according to some, the superior of his old teacher. Knowing their Liston, however, and his hostility to Syme, the authorities of the Infirmary had refused to have him on the staff. And he was already taking measures at Minto House to start a new hospital of his own.

There was Alexander Monro, too, the third of the series, the official but stereotyped Professor of Anatomy, and his rival Robert Knox, lecturing outside the pale to as many as five hundred students. As an army surgeon he had tended the wounded of Waterloo. He had studied in Paris under the world-famous Cuvier. And as the lecturer on anatomy at Barclay's School—Jamie was smuggled in sometimes to hear him—he appeared before his class, with meticulous care, as the best-dressed man in Edinburgh. It was not realized then, though it was to be discovered the next winter, that some of the bodies upon which he demonstrated had been sold to him by Burke and Hare as the result of their murders in Tanner's Close. And when it became known, innocent though he was, he was literally in danger of his life. But he continued to lecture, with pistols in his pocket and the mob

outside howling at the doors. And meanwhile Jamie, unable to resist, had definitely embarked as a medical student, enrolling himself under Liston at the Royal Infirmary, and grimly resolved to be second to none.

That was a good thing, perhaps, since almost at once he found himself the subject of an ordeal that another young student, though in the opposite camp of Syme, was undergoing with an equal horror. It was not an unusual one—an amputation of the breast, at which they were both obliged to be present. But their reactions to it, both then and in the future, were curiously typical of each. Upon Jamie, always the more violent of the two in his pity, wrath, and enthusiasm, its immediate effect was to send him headlong from the building, resolved never again to enter its doors, and its final result—since he was far too stubborn really to be turned from his purpose—a never-to-be-forgotten vow to do all that he could for the physical relief of pain. Within the other—his name was John Brown—it was to become a page or two of the world's tenderest story. And in a spiritual sense, perhaps, it was almost at the same moment that chloroform and *Rab and his Friends* entered the womb.

But Jamie was no mystic, or not yet—save for an orthodox belief in a God willing to help Jamie—and he certainly had no intention of being beguiled into pathways detrimental to his career. Even his hobbies —his hunts for arrow-heads and urns—were strictly

kept in subjection. And although he was always ready, during his summer vacations, to help in the shop or upon the fields, he spent most of his time with the local doctor, who had been too late to bring him into the world. He was only seventeen, in fact, when he was entrusted with his first patient. And in spite of his father's death, just before his finals, he was still under nineteen, and too young to receive his diploma, when he was qualified to be a member of the Royal College of Surgeons of Edinburgh.

That was early in 1830, and after a holiday in Fife—in his lighter moments, and after the Bathgate fashion, he could play the squire of dames as well as another—he returned to Edinburgh, financed by John and Sandy, to pursue his studies for the M.D. Lodging with David, who had just set up as a baker in its northern suburb of Stockbridge, he gained some knowledge of general practice by assisting a doctor in the neighbourhood, and began for the first time—the subject had hitherto rather bored him—to be interested in midwifery. He even attended a course of extra-mural lectures, given by a future rival of his, Dr. Thatcher; kept up his anatomy with the assistance of Knox, whose students had given him a gold vase to express their confidence; probably visited Reid, now an assistant physician in the clinical wards of the Infirmary; and in 1832, the year in which Sandy married, took his M.D. at the age of twenty-one.

He could scarcely have done this earlier, and hardly was it behind him than he had obtained his first footing in the University. The thesis that he had submitted—it was the last occasion upon which Latin was the compulsory language—had been read by Dr. Thomson, the Professor of Pathology. And he had been sufficiently impressed to invite its young author to become his assistant at £50 a year, advising him also to specialize in midwifery, still the least popular branch of medicine. Indeed it had only recently, thanks to Professor Hamilton—a fierce little fighter with a chestnut wig—been added by the University Senate to its list of obligatory subjects. And in the autumn session of 1833—he had usually, as an undergraduate, slept through these particular lectures—Jamie was back again and observing the little Professor with a new and not wholly disinterested eye. He also became a member that year of the two Students' Societies, the Royal Medical and Royal Physical—founded by Cullen, the friend of the Hunters, nearly a century before. And determined as he was becoming, in due course, to be the wearer of Professor Hamilton's gown, it was none the less as a representative of the Bathgate family that he had begun to make his preparations.

When Mary reproached him, not without reason, for working too hard and damaging his health, 'Well, I'm sure,' he said, 'it's only to please you all.' And

in the spring of 1835, Sandy and John subscribed to send him abroad for a three months' trip. In this he had been anticipated by his friend, John Reid—now an assistant of Knox at the Old Surgeons' Hall—who had spent a year in Paris after leaving the Royal Infirmary. And accordingly, on the first of April, with Douglas Maclagan—afterwards, as Sir Douglas, the Professor of Medical Jurisprudence—he found himself in London and eagerly going the rounds of its various hospitals and learned societies.

Thus, at a meeting of the Linnean Society, he records the fact that the Duke of Somerset, who was in the chair, fell so fast asleep that, only after the most prodigious efforts, could he be roused to say how much he had enjoyed himself. And 'how different,' he wrote, after a suburban party, 'is the drawling and simpering through a lazy French quadrille from the excitement of a guid blithe Scotch reel or country dance.' Ominous of the future, too, was his immediate dislike of the medical superintendent of the Small-Pox Hospital. 'I hate the self-sufficient smirk of his mouth.' But on the whole he seems to have enjoyed himself. As seen from the coach on a May morning, the road to Southampton was a revelation to him, 'the neatness and cleanliness of the English cottages' far superior to anything that he had seen in Scotland, and the 'snow-white smock-frocks' of the peasantry entirely charming to the eye.

The drive from the coast to Paris, too, in a wagon of three compartments, travelling at eight miles an hour, was a thrilling experience. And he was impressed at Liège with its 'good-natured *gash* old wives, and sonsy, laughing-faced, good-looking, nay some of them *very* good-looking girls.' But in spite of a visit to Liverpool on the way back, where he stayed with the Grindlays, who were cousins of the family—the father a well-to-do merchant, and his daughter Jessie sufficiently like Mary to win his instant regard—he landed in Glasgow to proclaim himself home in 'that most sweet of all countries, Scotland.'

Meanwhile in Edinburgh the situation had changed, and there had been a clearing of the decks. Syme had defeated Liston, a couple of years before, in a fight for the Professorship of Clinical Surgery. And this had necessitated his admission to the staff of the Royal Infirmary. It had also involved, according to custom, the presence of Syme and his students at Liston's operations—acknowledged by the latter either with a snort, or a contemptuous shrug of his shoulders. After a troublous interval, however, Liston had received the appointment of Professor of Clinical Surgery to London University. And he had left Syme, with his immense following, the surgical monarch of all he surveyed.

Such was the position when Jamie put up his plate, soon after his return, while in lodgings near David,

and was elected, with Reid, as a Senior President of the Royal Medical Society for the ensuing year. This was not only an honour, but, as Jamie was quick to perceive, an invaluable opportunity of making himself heard. And he rose to the occasion with an opening address, prepared with all the industry at his command. Choosing for his subject 'The Diseases of the Placenta,' it was afterwards published in the *Medical and Surgical Journal*, and considered sufficiently remarkable to be worth translating into French, German, and Italian. It was at any rate clear to the members of the Society that they had elected a president of no ordinary kind. And a vivid impression of him—he was still only twenty-four—has come down to us from a chance visitor. With his 'massive brent brow, very piercing eyes but almost femininely tender; thick nose, fine mouth, lovely smile,' and 'half grown-up body,' he dominated the assembly to an extent that left little doubt as to his future. And he was already beginning to attract, though chiefly amongst the poor, a few patients to his little consulting-room. In the following May, too, with the help of Professor Hamilton, he became house-surgeon at the Lying-in Hospital, but was still able to read an occasional novel —a habit that never afterwards deserted him.

These he had begun to discuss with his cousin Jessie Grindlay in a typically frank if sedate correspondence. And he seems to have had a further

interest—and Jessie as well—in a neighbouring young woman, whom he had nicknamed Cinderella. He was also moved to tell her, in June 1837, that he had just lost a patient through being unmarried, but was later to counterbalance this with the tidings that Professor Thomson had resigned the chair of Pathology, and that he had been chosen to lecture in his place, pending the appointment of a successor.

More often than not, this meant rising at three. And he had scarcely finished these interim duties before he was lecturing on obstetrics in the Extra-Academical School. Moreover his practice continued to increase, and 'I would not ask my eyelids,' he once wrote to Jessie, 'to keep longer apart for any person except your own cousinly self.' Even Cinderella—partly because her tastes, perhaps, showed signs of becoming expensive—began to fade from his busy landscape 'a lovely young lady; but somehow or other I have come to think this summer that there is a great difference between a lovely sweetheart and a lovely wife.' And when in 1839, at the age of twenty-seven, he took his first little house at £28 a year, he seems to have been far too engrossed with the great adventure to pay her any further attention.

This was the year in which Syme, who had just been made Surgeon in Ordinary to the young Queen Victoria, was to win £1000 damages from a fellow-

professor, who had been rash enough to criticize him in a new text-book. And before the summer was out, Jamie himself had plunged into the first of his public quarrels. Annoyed by something that he had read, and meeting the author, he promptly 'hoped,' with his usual candour, that he had not written 'the scandalous and lying article in the *Observer*'—the result being a challenge to a duel, averted at the last moment by John Reid and another of his friends.

Much more critical, however, if not for his life, for perhaps the whole of his future career, was the fight that awaited him early in the winter, when Professor Hamilton resigned the chair of Midwifery. This, as he had never concealed from anybody concerned, was the ultimate goal for which he was striving. But he had probably never envisaged himself as reaching it for a considerable time to come. Young as he was, however—and for this particular chair, youth was a disadvantage of the gravest kind—he instantly decided to enter the lists. And having no doubt as to his own ability—'did I not feel,' he said, 'I was the best man for the Chair, I would not go in for it'—he hurled himself into the battle with an intensity that had scarcely been paralleled even in Edinburgh. For seventy hours on end—it was an appointment by the Town Council—he wrote letters and canvassed. From everybody that he had ever met, both at home and abroad, from everybody who had corresponded with

him about his articles, from the editors of the journals in which they appeared, he collected opinions as to his worth. Since celibacy was a handicap he wrote hot-foot to Jessie, imploring her to marry him, and that soon. And though he was perfectly honest with his future father-in-law—he did not himself believe, he said, that he would be successful—and equally frank about his financial position and his debts to his brothers for furniture and education, they were married on Boxing Day so that he could face the event, secure at least upon one line of attack.

That he was exposed upon others, of course he knew—of which his birth, perhaps, was not the least. And certain of the Town Councillors, with an eye to business, doubted the drawing-power of so comparative a nonentity. Some of the older professors, too, were looking askance at the baker's son from Bathgate and his methods, and his flooding of Edinburgh—it had cost Sandy £150 to print it—with a volume of testimonials almost as long as the Bible. Was he a fit colleague, they were asking, having driven everybody from the field except a distinguished candidate from Dublin, for such men as Bell, the famous neurologist, now the Professor of Systematic Surgery, Robert Christison, the Crown's medico-legal expert, and the great Thomas Chalmers, prince of theologians? Even Syme had been compelled to take notice of this new and pushful young man. And

he had come to the conclusion—Jamie never forgave him—that, admirable as were his qualities, the other man was to be preferred. But for once—and he, too, may have resented it—Syme found himself on the losing side. And on February 4th, 1840, Jamie was elected by one vote.

For Jamie, and he knew it, it meant the end of poverty. But for the family—and he knew that as well—it meant something more. 'My dear, dear and fortunate brother'—the letter was from Mary, married and on board ship, and obscurely emigrating to Australia—'I have taken up my pen to wish you joy, joy. But I feel I am scarcely able to write. I never believed till now that excess of joy was worse to bear than excess of grief.' And to his profound satisfaction, in less than three years, he had more than repaid all that had been lent him.

From the moment of his appointment, indeed, his success had been phenomenal, and this to a certain extent, perhaps, in spite of himself. Faced, as he realized, on the part of his fellow-professors, if not with hostility, at any rate with suspicion, he had at once made it clear, to the point of emphasis, that he considered himself their equal if not their superior. When one of them, or so he fancied, altered the hour of his lectures to coincide with Jamie's first appearance, he was openly exultant to have countered him with an audience that beat all previous records. With Syme,

too, although the fiery Royal surgeon seems to have been prepared to give him a chance—'I heard Simpson's first lecture,' he wrote, 'and was greatly pleased' —Jamie had no intention of being conciliatory. And within a year, and with the help of the Town Council, he had successfully prevented him from abolishing the chair of Pathology. A few months later and he was fighting him again, and with equal success, for his friend Dr. Miller—a candidate for the chair of Surgery, vacated by the death of Bell, and one whom Syme had ferociously attacked. He had even gone so far as to send an anonymous letter—not that Jamie himself was above using this weapon—accusing Miller to the Lord Provost, magistrates and members of the Town Council, of having clumsily included an important nerve during an operation for the ligature of an artery, and certifying a gentleman to be insane, who was undoubtedly not a lunatic. After he had been appointed, Miller decided to forget this, appealing to Syme in a case of difficulty. And with his usual impetuosity, Syme accepted the gesture, and the two remained friends for the rest of their lives.

Only for a moment, however, and at the cost of alienating Miller, was Jamie ever to see this other Syme—the Syme of the consulting-room, with the pity in his eyes betraying the brusqueries of his speech, or of the intimate little dinner-parties, so different from Jamie's, gathered about his Morningside table.

And for no longer was Syme to behold the Jamie loved to idolatry by his friends and patients. Daring and permanent, too, as had been Syme's own innovations —he had once, in the middle of an amputation, been obliged to change his method, and without the loss of a moment devised another—he was approaching an age when such experiments by others are naturally regarded with caution. And to many besides himself, on professional grounds alone, the young obstetrician, seemed to require curbing. He had already introduced, for instance, a new instrument of diagnosis—the 'sound,' as it was called, that still bears his name. He was vehemently in favour of extending the use of the speculum, an admittedly useful aid to vision, but hitherto confined, for reasons of delicacy, to a few exceptional occasions. And he was unforgivably prone, whenever it suited him, to invade the provinces of other people.

But Jamie was always ready to return a heavier blow for any that he might receive. And as for his methods, he believed them to be scientific, and he had the best of evidence as to their success. Although he had taken the risk, within a year of marrying Jessie, of moving into a larger house and maintaining a carriage—partly to save his feet, but principally as a challenge to his more prosperous critics—the number of his patients had fully justified this. Before he was thirty-one he was employing two horses, and titled

ladies were waiting to see him. At thirty-two he was attending his first princess; he was the President of the Edinburgh Obstetrical Society; he was clear of debt; and he was the father of three children, Maggie, David, and Walter. At thirty-three he was earning £4,000 a year, and the recognized accoucheur of half the nobility of Scotland. And at thirty-four, having been called to Stafford House, where he was the honoured guest of the Duchess of Sutherland, he was amused but quite undazzled to find his biography being sold in the streets of London. It also enabled him to give Sandy's wife a useful hint on the prevailing fashions. Sandy was to tell her, he said, that artificial flowers were evidently no longer to be the vogue. 'The ladies here,' he wrote, 'wear nothing but real flowers in their hair. Often the duchess wears a simple chaplet of ivy leaves, sometimes a bracken leaf is all she sports.' And Lady Lorne, it seemed, descended on one occasion, adorned with 'a long branch' of brambles.

By then Jamie had established himself in his final abode, 52 Queen Street, where his name is still perpetuated. And he had sustained the first of the long series of bereavements, destined to cloud his immense success. Of his two favourite brothers, Sandy was to outlive him. But John had died a year or two before. And he had lost the three-year-old Maggie, of whom Jessie wrote to her mother, 'I miss her all day *every-*

where.' Entirely without method, too, in conducting his practice—except that his servants shut the door when they considered the house full enough—complaints were being made, not of his skill, but of the extreme uncertainty of ever seeing him. Ladies who had journeyed to Edinburgh for no other purpose found their hotel bills mounting alarmingly. And although this was regarded with equanimity by the Town Council, the doctors who had sent them were showing signs of annoyance. His feud with Syme also—still on his throne, but no longer the dictator that he used to be—had reached such a stage that they had actually denounced each other when happening to meet in patients' houses. But nothing could stem the tide, though he would leave a houseful of patients to discuss a problem of chemistry with Christison, or a bevy of titles for a difficult confinement in an Old Town attic. And he was still under thirty-six when he heard from the Duchess of Sutherland of his appointment as Physician to the Queen in Scotland.

It was an honour that he appreciated to the full. But writing to Sandy in January 1847, it is clear that it was wholly secondary to a series of events of which he had passionately devoured every detail. Coined by Oliver Wendell Holmes across the Atlantic, a new word was everywhere being whispered. And it seemed that Anæsthesia, already a toy of the labora-

tories, had suddenly emerged as an epoch-making reality. At the beginning of the century, as people were now remembering, Humphry Davy, experimenting with nitrous oxide, had found that by inhaling it —it was afterwards to be called 'laughing-gas'—he had relieved himself of the toothache. And Faraday had made a similar observation in 1818 after breathing the fumes of sulphuric ether. Earlier still even, a Dr. Pearson of Birmingham had prescribed the latter as a sedative. Dr. Beddoes of Bristol, a pioneer in the identification of gases, and the first employer of Davy, had been able, he said, to send himself to sleep with it. Henry Hickman, dead and derided—he had been an obscure practitioner at Ludlow in Shropshire—had pleaded in vain, after using it upon animals, for the extension of laughing-gas to human surgery. And finally Dr. Crawford Long, practising in Georgia, more than a hundred miles from the nearest railway, had performed a minor operation with the help of ether five years before in 1842.

The world did not know this yet. But Horace Wells, a dentist of Hartford, Connecticut, had had a tooth out, without suffering pain, while inhaling nitrous oxide. And in 1845 he had visited Morton, an old partner of his practising in Boston, and persuaded him to investigate what seemed likely to be a valuable aid to dentistry. Being no chemist, Morton had then repaired to a former teacher, Dr. Jackson.

And Jackson had advised him, if he meant to proceed, to employ ether rather than nitrous oxide. Accordingly on September 30th, 1846, having administered ether to one of his patients, Morton had removed a tooth and the patient had recovered, completely oblivious of all that had happened.

Armed with this, and intending to take out a patent, in the profits of which Jackson was to share, Morton had then approached the authorities of the Massachusetts General Hospital. And they had agreed to give him the chance of a longer and more serious test. On October 17th, Morton being the anæsthetist and Dr. Warren the operator, a tumour had been removed in the presence of the whole staff, with entire success and freedom from pain. And on November 7th, Dr. Warren had performed an amputation under similar conditions with equal triumph. Very properly, however, the authorities had refused to adopt an agent, whose composition Morton had meant to keep secret. Apart from the colouring matter, with which he had disguised it, it had proved on analysis to be ether. And there had followed the dreary battle for priority, which was never, perhaps, to be finally won. But the tidings of the discovery had spread like wildfire. Before the end of the year Liston, at University College Hospital—the nineteen-year-old Lister being present as a student—had performed a major operation, the first in England, upon a patient under the

influence of ether. And by the middle of January, when telling Sandy of his new appointment, 'I am far less interested in it,' Jamie was able to write, 'than in having delivered a woman this week *without* any pain while inhaling sulphuric ether.'

Indeed, as he added, 'I can think of nothing else.' And having communicated this case—the first of its kind—to the *Monthly Journal of Medical Science*, there was no other subject upon his horizon. Having first satisfied himself that the giving of an anæsthetic was reasonably safe both for the mother and the child, and that it had no effect—or no very outweighing one—upon the normal processes of Nature, he set about discovering an alternative agent. As he had already foreseen, ether was never likely to be suitable for the midwifery emergencies of general practice. And it was by general practitioners, often in remote situations, that the bulk of such emergencies had to be faced. For month after month, therefore, with the help of his assistants, Matthews Duncan and George Keith, he spent every spare moment investigating and inhaling a long series of chemical preparations. But it was not until the 4th of November, after risking his health, not to say his life, in a score of previous experiments, that he found what he wanted in an overlooked bottle of perchloride of formyl or chloroform.

This had been recommended to him by Mr. Waldie, a fellow-Linlithgowshire man, who was a chemist in

Liverpool. And having spent the evening, after the dinner-table had been cleared, sniffing in vain at various other fluids, he suddenly bethought himself of Waldie's bottle, and found it at last under a heap of waste paper. Charging their tumblers, the trio then sat down again. And when Jamie recovered his senses, it was to find himself on the floor, with Duncan beside him and Keith kicking his legs about trying to get up. That was how Professor Miller, anxiously coming round to see if any of them were alive, discovered them. And early the next day Jamie was arranging with Messrs. Duncan and Flockhart for further supplies of the new anæsthetic. On November 8th, for the first time, he employed it in a maternity case. And on November 11th, he was describing it to the Medico-Chirurgical Society of Edinburgh.

As a compound, of course, it had been well known, having been discovered almost simultaneously by Soubeiran in France, Guthrie in New York, and Liebig in Germany. Flourens in France, although without Jamie's knowledge, had described its anæsthetising effect on certain animals. But it was Jamie who established its claims, first in midwifery, and later in surgery, to serious consideration. As he pointed out in his paper, its effects were more rapid, complete, and persistent. It was less expensive, more agreeable, infinitely more portable, and required in less quantity.

And it had the great advantage of demanding no special form of inhaler. In three cases, operated upon by Miller in the Royal Infirmary, Jamie had procured unconsciousness, first with an ordinary pocket-handkerchief and then by using a simple hollow sponge. And so deep an impression had his announcement made that, when it was published in pamphlet form, four thousand copies were sold almost at once, and tens of thousands in the following few weeks.

It was true that Syme, who had been present at the Infirmary, had been inclined at first to scoff—growling that he had believed himself, there were so many parsons present, to have come into a meeting of the Presbytery. But having recognized its value, as he was obliged to do, he was far too honest to oppose it. No less than vaccination, however, and inoculation before it, and—as Jamie pointed out—most medical reforms, it was to meet with the fiercest opprobrium, and especially as applied in Jamie's particular field. Permissible as it might be—though not everybody would admit that—in the case of ordinary operations, when it came to childbirth, questions arose that had their roots in the Bible. Jamie was interfering, he was told, with the primal curse, whereby women must bring forth their children in sorrow. And he was thundered against not only in the pulpit, but by theologically-minded doctors.

But Jamie was a Free Churchman himself. And

although the mellow old Chalmers, who thoroughly approved of him, had gently advised him, before he died, to pay no heed to these 'small theologians,' it would have needed a dozen Chalmers, and probably a Highland regiment, to keep Jamie out of the fray. 'The true moral question,' he said, 'is, Is a practitioner justified by *any* principles of humanity in not using it?' And he declared every operation performed without it to be a piece of 'deliberate and cold-blooded *cruelty*.' In any case he intended to appeal, and saw that he did so, above the heads of the clergy and recalcitrant doctors, to the people at large, both on medical and theological grounds. Anæsthetics, he said, had already reduced by a third the mortality subsequent to amputations. And as for the primal curse, the Hebrew word for sorrow was not the same as the English word for pain. Moreover the curse, if in fact there had been one, had occurred under the old dispensation. And it was the major part of orthodoxy that this had been succeeded by another, whose name was mercy.

So powerful was his advocacy, indeed, that by the end of the next ten years his name had become a household word. And if time was to reduce a little the claims of chloroform, and a little to restore those of ether, this was not to diminish the debt of women to Jamie's campaign on their behalf. But by then the fight had been securely won. It was known that the

Queen had received chloroform at the birth of Prince Leopold. And Jamie had long since settled down as the leading figure in the academical life of Edinburgh. Though he was still young—in years only forty-six—with his rounded body and his hair falling about his shoulders, he had already become stamped with the sort of timelessness appropriate to his position as one of the city monuments. And the city had recognized and applauded his refusal to reap the harvest that awaited him in London.

Even as things were, this might have been a bigger one. But he had ceased to trouble himself much about money, cramming into his pockets whatever his patients chose to give him, and seldom if ever sending out a bill. In his Queen Street house, too—he had bought another at Trinity, on the coast of the Forth, to which he sometimes fled—he kept a table at which visitors from the ends of the earth, sometimes thirty or forty of them, would sit down to a meal. 'We breakfast at nine,' he would say, 'lunch at two, dine at half-past six; come when it suits you.' And he grudged no expense, homely as they were, to make his entertainments a success. For some *tableaux vivants*, the young secretary of the University—Alexander Smith, the future author of *Dreamthorp*—was commissioned to write a special prologue. And when, at luncheon one day, he suddenly informed his wife that he had asked the whole of his students to her

evening's ball, surely it would be quite simple, he said, to order some more musicians and double the quantity of food.

Devoted as she was to him, indeed, Jessie's life must have been almost as strenuous as her husband's. And in addition to a house that, in Jamie's words, was more often than not a little hotel—'always some sick lady or another sleeping in it, and sometimes several at night'—there were now eight children, of whom the baby Evelyn was still under two years old. Of these David, the eldest, was presently, for a short time, to become his father's assistant. Walter, or Wattie—afterwards to be the friend and companion of Robert Louis Stevenson on his *Inland Voyage*—was at the Academy and a promising cricketer, especially behind the wickets. And there were James and Jessie, Willie and Magnus—the latter named after Dr. Magnus Retzius, the Stockholm professor, to whom Jamie had dedicated his *Obstetrical Memoirs*, published in 1855.

This was the year before Lister, soon to overshadow them both, had married Syme's daughter and taken a house in Edinburgh. And for the moment there was a truce, though rather an uneasy one, between his father-in-law and Jamie. Developing an abscess a few years before—and to the not unnatural chagrin of Miller—Jamie had decided, on his wife's advice, to ask Syme to attend him. And thanks to Syme's skill

and Jamie's gratitude, a reconciliation had taken place. But Jamie's next crusade, the reform of hospital structure, had tended to aggravate the old surgeon. It had involved the collecting of certain statistics with which Jamie, he thought, had no right to meddle. And when, at the age of fifty, he began another in favour of an operation known as Acupressure, Syme was unable—and not without justification—to contain himself any longer.

To the surgeon of to-day, if he has ever heard of it, Acupressure is merely a curiosity. But it was at least an evidence that Jamie had begun to appreciate the problem so brilliantly to be solved by Lister. In his work upon hospitals, more crowded than ever since the coming of anæsthesia, Jamie had been impressed by the fearful mortality due to what is now known as sepsis. And he had merely paused, as it were—sternly as he was to handle him—upon the brink of Lister's conclusions. In surgical wards, he said, patients were constantly being infected by 'morbific, contagious materials from the bodies of other inmates.' And in certain cases, such as those of puerperal fever—the blood-poisoning occurring after childbirth—he was satisfied that these 'materials' were generally conveyed by the doctor, nurse, or dresser.

As regards hospitals, he had advocated the solution that these should no longer be built in towns, and that they should consist of cottages, periodically destroyed,

containing no more than three or four patients. And in less exaggerated form the idea was being adopted in the pavilion type of structure, already being exemplified, thanks to Florence Nightingale, in the Royal Herbert Hospital at Woolwich. But he had also, without understanding it, noted the danger of introducing foreign substances during operations. And it was to obviate the suppuration and secondary hæmorrhage, so often accompanying the use of ligatures, that he had begun to preach, to the point of fanaticism, his alternative of Acupressure.

This was an ingenious method of compressing arteries by means of needles thrust through the tissues. And since, as he had rightly observed, metal was less infectious, it had the advantage of cleanliness. But it was a cumbrous procedure, though Jamie refused to admit this. In many operations it was quite impracticable. And Syme was tactless enough to say that it reminded him 'of the powders for killing fleas, which required that each of them should be seized by the nape of the neck so as to make them gape and admit a mouthful.' In fact Jamie's pamphlet on the subject so annoyed him that he tore it in pieces in front of his students. And for the rest of their lives—they died within a few weeks of each other—the gulf between them remained unbridged.

But Jamie's quarrelling days, if they were not over, had taken a gentler complexion. Even when he

reminded Lister, whom he suspected of undervaluing Acupressure—and who had for ever damned himself by becoming Syme's son-in-law—that he was not the first to notice carbolic acid, the language in which he did so had lost its old sting. And there had come to be fights for which he had no time. That was not surprising in view of his practice and the increasing demands of his principal hobby—he had become a Vice-President of the Society of Antiquaries and a sort of general archæological consultant. And at the age of fifty he had been suddenly caught up by a passing wave of religious revivalism. Touched to the core of his impressionable heart by a new vision of Christianity, he had begun, to the astonishment of most of his colleagues, to talk about his soul and address prayer-meetings. And although he presently dropped this, the experience had remained to soften his answers in the presence of wrath.

It was also a stay, perhaps, against the tides of ill-health and family troubles that were heaping themselves upon him. At fifty-one he lost his son James. And hard upon his baronetcy, three years later, came the deaths of David, his heir and assistant, and his adored seventeen-year-old Jessie. Walter was in Egypt then, as the manager of a cotton business, and 'Oh my dear dear Wattie,' he wrote, 'you and I and all of us have no friend whom we can *always* trust and always rely on but Jesus.' And it was not until he

was fifty-eight and receiving the freedom of the city, that the earlier Jamie again crept out. Recalling the days when the Town Council had hesitated on business grounds to appoint him, and remembering that he had been worth, or so it was said, £80,000 a year to the Edinburgh hotels, he could not deny himself the satisfaction of a delicately barbed 'I told you so.'

But Edinburgh understood him, and he was nearing his end. For years he had been struggling against repeated heart-attacks. And it had been the townsmen who had given him his chance, and to whom he had turned in most of his battles. Mercilessly as he had fought, too, for himself and his ideas, the book of his life had been an open one. In an age that was rampant with them, he had never been a snob. He had never left a poor patient to placate a rich. And on the day of his funeral in the following May—he had died with his head on Sandy's lap—the only street in Edinburgh that was not deserted led to a grave in Warriston Cemetery.

IX

LISTER

Facile princeps medicorum—so most of his fellows came to look upon Lister, and with Jenner, John Hunter, and William Harvey, he remains one of the world-figures in English medicine. To the achievements of them all, however, as in every medical discovery, there had been a prelude of tentative explorations—data correctly observed, but misunderstood or not fully appreciated by earlier pioneers. Before the imaginative genius of Harvey, and his patient exactitude had evoked their meaning, the presence of the valves implying the circulation of the blood had been noted by other anatomists. And the way of Lister, with his transforming gospel of Antisepsis in surgery, had been similarly prepared by lesser forerunners, both in its philosophy and practice.

Bending over his microscope in the seventeenth century, the half-forgotten Leeuwenhoek of Delft had already described the appearance of what are now known as bacteria. And Abbé Spallanzani, in the following century, without realizing their significance —their enormous rôle in the drama of life—had even made experiments in their culture. Leeuwenhoek had

also demonstrated in the structure of yeast—the mysterious substance that converted sugar into alcohol—the presence of minute and hitherto unsuspected globules. And Cagniard de la Tour, when Lister was a boy of seven, had concluded that the 'fermentation,' with which they were associated, was a direct product of their existence, and therefore a vital process. In this he had been supported by Schwann of Louvain—the first to establish the theory that every living being has its origin in a single cell. And although for some years their views had been discredited by the chemical explanations of Liebig and Berzelius, Louis Pasteur—Lister's senior by five years—was eventually to prove that they had been right. He was also to point out that other 'fermentations'—such as the souring of milk and butter—were dependent upon, and could be produced by living and multiplying micro-organisms; that the allied or synonymous process of putrefaction was similarly attributable to the presence of germs; and that it was not the air itself, as had been hitherto supposed, but these dust-carried agents in it, which were responsible.

Meanwhile it had been shown that by heat and filtration air could be deprived of its putrefactive powers, and that there were certain substances that could check decomposition or suppuration in the human body. Realizing, as he did, that blood-poison-

ing after childbirth might be due to contamination from attendants, the unfortunate Semmelweis had halved the mortality in the great Lying-in Hospital at Vienna by the simple precaution of making his assistants wash their hands in chloride of lime. And although the real reason of this was unknown to him, and he had prejudiced his case by maintaining an incomplete one—he was out of his mind and dying under restraint when Lister had grasped and was beginning to apply the truth—his doctrine had been endorsed both by Simpson and Oliver Wendell Holmes. Jules Lemaire, too, a general practitioner in France, had obtained considerable success with carbolic acid. And finally Spencer Wells, perhaps the ablest surgeon in London, and earlier than Lister in studying the work of Pasteur, was succeeding in operations, thanks to an intuitive cleanliness, that few of his colleagues dared to attempt.

But it remained for Lister, emerging upon the scene from his serious and tranquil Quaker upbringing, to perceive in its fullness and make manifest to the world the great inheritance to which they were all stumbling—and this with none of the consciousness, such as was John Hunter's, of having been endowed with the eye of genius. 'As to brilliant talent,' he confided to his father, in a letter written when he was twenty-eight, 'I know I do not possess it; but I must try to make up as far as I can by perseverance.' And

mistaken as he may have been, there can be no doubt of the complete sincerity behind his pen.

Sprung as he was from a little community that would never take an oath even in a court of law—and whose simple affirmation, in the words of Lamb, was held to be valid on the most sacred occasions—he had grown up in an atmosphere that frowned, even in jest, upon any inaccuracy in the use of words. Liable unadorned to be rendered to God, there must be no light tossing of them to Caesar. And he had known none of those 'scandals, jokes, ambiguities and a thousand whim-whams' that the heart of Elia, much as he loved the Quakers, could never have foregone for the sake of joining them.

Given the temperament, however, that he possessed, he was entirely fortunate in his surroundings. And from the worldly point of view he was to experience none of the struggles that had left their mark on Hunter and Simpson. Forbidden by their faith to join the army or navy, and by the law of the land to enter the universities, the ablest of the Quakers, for several generations, had necessarily employed their talents in trade. Lacking the temptation, or at any rate resisting it, to spend their earnings in the usual frivolities, their natural integrity and frugal way of life had resulted in the amassing of considerable wealth. And it was into this Quaker aristocracy of bankers and brewers, of Buxtons, Frys and Gurneys,

that Lister was born in April 1827 at Upton House near Plaistow.

Shorn of a wing and most of its garden, and the whole of the fields in which it stood, it is now the vicarage of an industrial parish, long since enveloped by the East of London. But at Lister's birth it was one of a little group of gracious and prosperous early eighteenth-century houses, surrounded by the farmlands of Thames-side Essex, with the wild fowl nesting in Barking Marshes, and the panelled bedroom in which he was born looking westwards over Ham Park. This was the home—now an 'open space,' carefully protected by Corporation railings—of his father's friend and fellow-Quaker, the Lombard Street banker, Samuel Gurney. And before the coming of the railway, when Lister was twelve years old—the fourth child in a family of seven—Mr. Lister and his neighbours, when the weather was fine, rode to their offices on horseback, or were collected by a coach, waiting at convenient points, and signalling its arrival by a horn.

In spite of prohibitions, therefore, that weighed less hardly upon Lister than upon some of his brothers and sisters, the seven children—Mary, John, Bella, Joseph, William Henry, Arthur and Jenny—were the happy possessors of very real and rather rare advantages. If they had to spend long hours once in the week and twice on Sunday at the Plaistow meeting-house, there was cricket in a garden that had been the sanctuary of

the last red deer hunted in Essex. And if Arthur deemed it wise, when teaching himself the flute, to retire under the bedclothes for the purpose—if a trembling Jenny would fain have escaped sometimes from the morning Latin lesson while her father was shaving—not many children can have owed more to the character and encouragement of their parents.

From both they had inherited not only health and a grave and aquiline beauty, but an aptitude for learning that could scarcely have asked for a more favourable environment. Born of sturdy North Country stock, their mother had been a teacher in a Quaker school. And their father, a Yorkshireman by descent, and in his ordinary way of life a successful wine merchant, was one of the leading microscopists of his time, and had been made a Fellow of the Royal Society for his work on optics. Strict as they were, too, in their religious outlook, it was with a religion that was lived rather than spoken. And although such dubious arts as those of the theatre and the ballroom were as tacitly forbidden as the least infringement of truth, the children were whole-heartedly free —and with a father eager to help them—to explore the innocent fields of Nature.

Taken as a whole, indeed, it would probably have been difficult to find a more spiritually united family. And if Arthur was a little unhappy at his first school, and John perhaps more than this in his younger man-

hood, from Lister himself, announcing as a child his firm intention of becoming a surgeon, there seems to have been no cavilling at restraints that left him plenty of room for his particular hobbies. Thus at fourteen, and home from the holidays from Grove House, Tottenham, the leading Quaker school, we find him busily dissecting, and clearly on the most loving and unbarriered terms with his father. 'I must just write thee a short note,' he says, in his Quaker phraseology, 'to tell thee how I spent my time when Mamma was out, and also after she came home. When Mamma was out I was by myself and had nothing to do but draw skeletons, so I finished the cranium and named the bones of it, and also drew and painted the bones of the front and back of the hand and named them.' On 'seventh day,' however, Mamma seems to have come home. And in the evening, with the help of John, he managed to articulate the skeleton of a frog, and 'it looks just as if it was going to take a leap.' For the purpose of mounting it, as he then goes on to explain, he 'stole one of Mary's pieces of wood.' And having submitted that it 'looks rather nice,' 'do not tell Mary,' he adds, 'about the piece of wood.'

Mr. Lister, too, with no great enthusiasm for it, never seems to have opposed his son's choice. And although at seventeen, when he sent him to University College, London, he thought it advisable for him to take a degree in Arts, it was with the full understand-

ing that this was only a preliminary to his career as a surgeon. One of the chief attractions, indeed, of University College—apart from its generally serious and non-sectarian character—was the Hospital attached to it, one of the best in London, and with the great Liston still at its head. And it was while he was still working for his B.A.—and perhaps a trifle too strenuously avoiding the world—that he had strayed into the theatre to see Liston perform his first operation under an anæsthetic.

That was in 1846, the year before Liston died, reconciled in the end to his old enemy Syme. And it was also the year in which John died at Upton, to the lasting grief of his parents. As the eldest and most promising of their sons, he had been the least amenable to the family code. But his early death, perhaps, was to inspire in them both a new and deeper understanding of youth. Nothing, at any rate, could have been wiser or more tolerant than his father's advice to Lister himself, when he had broken down, both in health and spirits, after taking his B.A. two years later. For four years he had been working too hard. He had confined himself in London to the strictest of circles. He had suffered rather severely from an attack of small-pox, and was passing through a stage of acute self-criticism. Having sent him to Ireland, therefore, to recruit, and with the tenderest perception of what was required, 'believe us,' his father wrote,

'that thy proper part now is to cherish a pious cheerful spirit, open to see and to enjoy the bounties and the beauties spread around us;—not to give way to turning thy thoughts upon thyself nor even at present to dwell long on serious things.' And with the family reticence he goes on to say, 'do not consider thyself required to answer this, which contains some things I should not generally advert to.'

Happily the mood passed, and although there was always a tendency in him less perhaps to melancholy than abstraction, his medical studies, begun in October 1848, led him into new and more cheerful surroundings. In Wharton Jones and William Sharpey, both physiologists of a high order, he found friends and teachers, who were to be of the utmost help in guiding his steps and lending him self-confidence. And he had learned a lesson, which he never forgot, in the value of timely and care-free holidays. In the following spring, for instance, he was in Germany, exploring the gabled streets of Hanover, and describing for Jenny's benefit a visit to the King's stable—'our Queen's uncle, as I daresay thou knowest'—with a healthy interest in the *table d'hôte* and the various shopkeepers with whom he had chatted. And a couple of years later, when he was twenty-four, he was spending a leisurely August at Shanklin, catching shrimps and examining them under a microscope, and swimming fifty-two yards, as he said, in two minutes.

Meanwhile, with a natural bent towards physiology and the minuter problems of the human architecture, he was gaining his first experiences of operative surgery in what was still a typical London theatre. Up-to-date as it was, all that was considered necessary in the University College Hospital of 1851, was a small room with a single gas-jet, one basin, and a wooden table. And a Wednesday afternoon usually sufficed for the operations of the whole week. But as house-surgeon to John Erichsen, the Anglo-Dane upon whom Liston's mantle had begun to fall—and the author of a text-book that was to become a standard work—Lister had a chief of great ability. And he had been thrown, as a resident, into his first intimate contact with men of a completely different sort of upbringing. It was true that Edmund Hornby, fresh from his Peninsula amours, had just left the Hospital in disgust. But there were others as familiar, no doubt, with the works of Paul de Kock and the lighter-hearted aspects of London life—cheerful young souls from the various public schools and the older and more catholic universities. And profoundly as he differed from them, he was to discover—a little to his surprise, perhaps—that they were not wholly uncompanionable. They had even been able sometimes, for all his self-discipline and natural preoccupation with the things of the mind, to unlock the well—seldom revealed to strangers—of his own rather childlike and simple gaiety. And he

was already making a name for himself as an observer, likely to do well in microscopical research.

At the age of twenty-five, having taken his degree in medicine and become a Fellow of the Royal College of Surgeons, he had confirmed the discovery, just made by Kölliker in Germany, that the iris of the eye was an involuntary muscle. And he had proceeded to detect in it, to Kölliker's delight, the presence of separate dilator and sphincter fibres. He had also delicately illustrated the tiny muscles that lift and depress the hairs of the scalp. And both these pieces of work were to attract considerable attention when published in the *Quarterly Journal of Microscopical Science*. But it was still as a surgeon that he meant to practise, although there was no necessity for him to be in a hurry. And after some experiments in the digestive processes of mice, and a pleasant holiday in Killarney, he decided in September 1853 to spend a month or two in Edinburgh.

In this he had been partly influenced by William Sharpey, who had given him a letter to his old friend Syme, and partly by the prestige of the Edinburgh school and the immense reputation of Syme himself. Indeed at fifty-four, as he then was, Syme was generally considered the first surgeon in Europe. And he seems to have been favourably impressed by the good-looking young Quaker, with the serious eyes and ghost of a stammer. At any rate, having summed him up and

read Sharpey's letter, he promptly invited him to dinner. And Lister was to find himself, within a very few days, completely at home with the Morningside household. This consisted, he found, of Agnes and Lucy, Syme's daughters by his first marriage, the second Mrs. Syme, and three younger children. And included amongst their intimates were John Brown, Simpson's old travelling companion Douglas Maclagan, and the Viking-like Robert Christison, Professor of Materia Medica, who was to be climbing mountains when he was well over eighty.

From Lister at twenty-six, too, Syme was speedily to evoke all a young man's homage. Though he hated the controversies in which Syme revelled—'in fact, I doubt if I could do it,' he wrote, 'though I have never tried much'—he did 'love honesty and independence.' And nobody could have accused Syme of lacking either. Moreover, in the Royal Infirmary, with its two hundred surgical beds—the hospital that he had just left had only sixty—he was entering a world, thanks to Syme's good offices, of almost boundless opportunity. And Syme was not only giving him work there as a sort of unofficial house-surgeon but using him as an assistant at his private operations. Lister, in his turn, was helping the older man with his microscopical skill and knowledge. And his friend George Buchanan was not far wrong when he wrote to him from London, in the middle of

December, 'Edinburgh—Syme—Super House Surgeon. Why! You must be in a perpetual state of bliss.'

It was little wonder, therefore, that the weeks had become months. 'Thou canst hardly conceive,' he told his father, 'what a high degree of enjoyment I am from day to day experiencing in this bloody and butcherly department of the healing art.' And when he was asked at Christmas to take the place of Syme's regular house-surgeon, who had been called away, he had no hesitation in accepting a post usually filled by a less experienced man. For a Fellow of the Royal College of Surgeons, indeed, like himself, it might have been considered a trifle too lowly. But Syme had made it clear that he was prepared to regard him rather as a colleague than a subordinate. And he was to be given full discretion to operate, if he wished, upon all emergency cases admitted at night. With his twelve dressers, therefore, to whom he was soon 'The Chief,' he could scarcely have been better placed for mastering his work. And in the following year there occurred an event that was to keep him in Scotland till he was fifty.

This was the death in the Crimea of the gallant Dr. Mackenzie, who was not only a lecturer to the Edinburgh College of Surgeons, but also upon the staff of the Royal Infirmary. And it was suggested to Lister that he should apply for the vacant posts. If he were

successful, of course, this would commit him to the North. But he was already enamoured of Edinburgh life—Syme had somehow convinced him of its relative peace—and he had fallen in love with his daughter Agnes. Having made up his mind, therefore, and written to his father an explanatory letter of twenty-four pages, he took the Edinburgh Fellowship, the lecture-room used by Mackenzie, lodgings in Rutland Street opposite Syme's consulting-rooms, and after a month in Paris, practising operative surgery, was betrothed to Agnes in July 1854. For himself, as he knew, he could have asked nothing better. They were to remain inseparable for nearly forty years. But for his parents at Upton, since Agnes was not a Quaker, it meant saying good-bye to him as a member of their communion. Deeply as they regretted this, however, they put no obstacle in his way—he joined and was married in the Episcopalian Church of Scotland—and 'I trust we shall be very careful,' his father wrote, 'to say nothing in disparagement of those whom we shall probably find on acquaintance to be our superiors.'

Meanwhile he had begun his lectures to a class of twenty-three students, and with his heart at peace about his forthcoming marriage, was busy trying to discover precisely what happened in the earliest stages of inflammation. Taking the tiny blood-vessels of a frog's web, he spent 'glorious nights,' as he put it,

studying them through his microscope, first in health and then in their successive reactions to a growing degree of irritation. And the various changes, carefully observed and exquisitely drawn with the camera lucida, formed the subject of a paper, afterwards read to the Royal Society, and still unchallenged as a record of facts. Much more significant, however, for surgery at large and perhaps one or two of his rather bewildered students, was the presence in their midst of a practical surgeon who spent most of his time looking down a microscope—the curious spectacle with which Edinburgh was being faced even before his marriage in 1856.

This took place when he was just twenty-nine, and after the Scotch fashion, in the drawing-room of Morningside. And if there were any doubts as to its success, the creator of *Rab* was not to share them. They were 'his dear two,' as he afterwards wrote, 'made for each other and our good.' And 'Lister is one who, I believe, will go to the very top of his profession.' As for Agnes, remembering that she had been unconscious for three or four days during a baby illness, 'she was once in heaven,' he said, 'when she was a very little girl, and she has borne the marks of it ever since.' And their four months' honeymoon was an embryo picture of the life upon which they had embarked. After a week or two at the Lakes and a few days at Upton, they wandered about the Con-

tinent, visiting various medical schools, journeying to Vienna, where they met Rokitanski, the greatest living pathologist and a friend of his father, and whose own organs, to judge from his hospitality, must have been singularly well trained. Heralded by 'a dish of powerfully salted ham,' he at any rate provided them with a supper that contained roast goose, potatoes and French beans, 'dressed in something *very* sour,' and was brought to a close with rye bread, cucumber, cheese and beer. Lister and his wife, however, seem to have weathered it, and after a prolonged tour of the chief German hospitals, they were back in Edinburgh early in October and settling down into their new house.

This was also in Rutland Street, not far from John Brown's, and within a few days they were to receive the news that Lister had been elected, by a unanimous vote, to succeed Mackenzie on the Infirmary staff. He was thus on a higher footing as regarded his father-in-law—though still relying largely on his advice—and towards the end of February underwent the ordeal of performing his first two operations in his new capacity. Both were trivial. But early in March he was confronted with a much more serious piece of work—the removal from the arm-pit of a large tumour, dangerously surrounded by vessels and nerves. Luckily he was not facing it before the days of anæsthesia. But the theatre was crowded with critical

spectators. And he was naturally a little nervous, as he confessed to his sister Jenny, of his ability to carry it through. But 'just before the operation,' he wrote —it is one of the rare references to the deepest mainsprings of his life—'I recollected that there was only one Spectator whom it was important to consider.' And with the quiet deliberation that was always to be characteristic of him, he successfully plodded to the end of his task.

He had made a good beginning, therefore, and if his progress was not sensational, he was happily pursuing his chosen path. Though he failed as a lecturer —not surprisingly, perhaps—to attract many students at this stage of his career, he was as busy as ever with the researches that were unconsciously training him for his life-work. The paper on *Inflammation* was read to the Royal Society, and he was preparing another on the *Coagulation of the Blood*. And destined as they were to remain childless, his wife was always at hand to be his amanuensis. Ultimately it was hoped, of course, as indeed it came about, that he would succeed his father-in-law in the chair of Clinical Surgery. And Syme was doing his best to prepare the way both by precept and in procuring him work. During his own holidays he left Lister in charge. He gave him the full benefit of his vast experience. And if he failed to understand the importance to a surgeon of the sort of work that his son-in-law was doing, he

was always ready, to the end of his life, vigorously to uphold him against other people.

But his first period in Edinburgh was drawing to an end. And he had scarcely begun to establish himself in practice when he was faced, at thirty-two, with another and even more radical decision. It appeared that, owing to illness, a vacancy was imminent in the Regius Professorship of Surgery at Glasgow. And Lister was asked, tentatively at first, if he would be willing to apply for it. As a rising young surgeon, who had proved his capacity both as a scientist and an operator, he was given to understand—though there would be several other candidates—that he had a good chance of being accepted. And the position would probably gain for him—though he had to wait more than a year for it—an appointment to the staff of the Glasgow Infirmary. Moreover, in a city, twice the size of Edinburgh, there would be a far wider scope for private practice. And reluctant as he was to uproot himself so soon, he finally resolved to let his name go forward.

So began—he was elected in January 1860—the decade that was to alter the face of surgery. And it is amusing to reflect now upon the circumstances that postponed his admission to the Infirmary staff. Unlike the Professorship, which was in the hands of the Crown, this was selected by a local board. And the prosperous manufacturer who happened to be its

chairman, refused to be impressed by Lister's arguments. As a professor in the University lecturing to students, he had urged the importance of having beds, not only for his own sake but that of his pupils, to whom he could thus demonstrate cases. But he was told with dignity that this was an 'Edinburgh idea,' that 'our institution is a curative one. It is not an educational one.' And it was not until August in the following year that he obtained the position.

Blessed as he was, however, with private means and an equable disposition, this was no great hardship. And his reception by his new colleagues in the University itself had been all that he could have wished. A hundred years older than that of Edinburgh, its present home was already coming into being, and amongst his welcomers were Allen Thomson, the Professor of Anatomy and an old friend of Sharpey, Edmund Lushington, the Professor of Greek—and incidentally the brother-in-law of Tennyson—and the future Lord Kelvin, who held the chair of Physics. He was to experience the thrill, too, at his first summer lectures, of facing an audience of nearly two hundred. And if the year was clouded by the death of his brother William Henry, who had developed phthisis during his life as a farmer, he was to gratify his father by joining him as a Fellow of the Royal Society at the early age of thirty-three.

In this he was presently to be followed by his

younger brother Arthur, and in due course by one of Arthur's sons—a harvesting of honours by a single family only to be matched by the contemporary Darwins. And two other grandsons were to receive titles for their distinguished work in surgery. Alone as they were, therefore, in the old house at Upton—and if their tenets had permitted them—Mr. and Mrs. Lister might well have been a trifle proud of the way in which their children were developing. All were happily married. And though Joseph at Glasgow and Bella at Dublin were far from home, the other three were still in touch with the Quaker colony in which they had been born. Mary, now Mrs. Godlee, was close at hand, with a boy of eleven who was to become President of the Royal College of Surgeons. Jenny at Woodford had married Mr. Smith Harrison, a tea-merchant in a large way of business. And Arthur, in his father's firm, but with a passionate love of botany that was to make him an authority on the higher fungi, had settled at Leystonstone, three miles away, in a mellow-bricked house after his own heart.

Behind Agnes, too—though with a very different father—was the pleasant background of her Morningside home. And while he was waiting for his wards in the new surgical building, just being added to the Glasgow Infirmary, Lister was occupying his time, placidly enough, with an article on *Amputations* for a proposed *System of Surgery*. In this it is clear that he

was still deeply engrossed with the subject of inflammation and its dreaded sequels. But as a technical surgeon his ability is revealed in a method of his own for amputating near the knee-joint. And when in November 1861 he performed his first operation in the Infirmary theatre, 'it is curious how *entirely* absent,' he wrote, 'any shade of anxiety was during the whole proceedings.'

For all his skill, however, and that of his colleagues —some of them his superiors, perhaps, in actual operating—and the hopes that had been founded upon the new wards, though it was afterwards discovered that they had been built upon a burial pit, the usual consequences ensued. That most wounds should suppurate was, of course, accepted as normal. There was even a substance known as 'laudable pus.' But apart from this, as in every great hospital, gangrene and blood-poisoning were rife. As Simpson was to show, more than a third of their amputation cases died from one or other of these causes. And there were recurrent epidemics of a severe and often fatal degree of erysipelas. Nor were they to be explained, though they appeared to be increased, by overcrowding and urban conditions. In spite of the little-known and local success of such precautions as had been taken by Semmelweis, and the proofs laid by Pasteur before the French Academy of Science in support of his germ-theory of decomposition, the responsible agents

had not yet been recognized. And it was not until Lister, carrying for the first time the full responsibility for his own wards, had stumbled almost by chance upon Pasteur's work that the great reformation began.

Curiously enough, though he was familiar with French and German, and Pasteur's work was already three or four years old, he was only to discover it in 1865, thanks to Dr. Anderson, the Professor of Chemistry. But having mastered it, he realized at once—and with all its implications—what had happened to him. Having already satisfied himself and taught his students that pus in a wound meant decomposition of tissue; that this was somehow dependent upon, but not due to the air; and that there could be no wound infection without it, he now perceived, staring him in the face, the explanation for which he had been wrestling. It was the micro-organisms that were the enemy. And since, as he then believed, all of them were malign, to attack them in the citadel was insufficient. They must be destroyed before they entered the gates.

The next step, therefore, was to find a weapon capable not only of killing them in the air, but upon the hands, instruments, sponges and dressings that would come into contact with the wound. And he finally settled upon carbolic acid, which was being used as a deodorant of sewage at Carlisle. This had been made in England since 1857 by Frederick

Calvert, a Manchester chemist, and applied to wounds as a local disinfectant—though Lister did not yet know it—by Lemaire in France. And armed with a crude form of it, rather too strong, he began his campaign. Even so, however, his success was astonishing, and the test that he had imposed upon himself was a severe one. Of the common cases of accident admitted to the Infirmary, those with compound fractures were the hardest to treat—involving, as these did, a break in the skin admitting the air to the broken bones. So constantly, indeed, did such wounds become infected, with resulting gangrene and danger to life, that many surgeons preferred to amputate at once rather than attempt to repair the limb. And these were the cases that Lister chose for his first experiments in the new technique.

With the aid of his house-surgeon, young Hector Cameron—afterwards, as Sir Hector, himself to be Professor of Clinical Surgery—each wounded limb was carefully swabbed out with carbolic-soaked lint held in a pair of forceps. And the bones having been set, it was covered with a dressing also soaked in pure carbolic acid. This was held in place with what Sir Hector has described as a sort of tin straw hat, removed once a day for the lint beneath again to be smeared with pure carbolic. Afterwards Lister was to find that this was too powerful, and a weaker solution was accordingly used, while a sort of putty, made of painters'

whiting and carbolic, took the place of the tin hat. But by the end of 1866 he had collected a list of cases, such as had never been seen before, of perfectly healed limbs, with the bones firmly united, in which there had been no atom of suppuration.

During the next twelve months, these were published in the *Lancet*. With an equal success, he had treated a group of chronic abscesses. And when, in the following August, at the annual meeting of the British Medical Association at Dublin, he read his first paper—he never wrote a book—*On the Antiseptic Principle in the Practice of Surgery*, he was able to announce that, for nine months, there had been no case in either of his wards of pyæmia, erysipelas, or hospital gangrene. He even suggested that ligatures —hitherto left to hang from wounds till they had sloughed themselves loose and could be safely pulled away—might be cut short and left to themselves under conditions of strict antisepsis. And it was probably this—since he wanted to replace them with needles—that drew down upon him the wrath of Simpson. At any rate it was Jamie, with his omnivorous reading, who tartly inquired if he had heard of Lemaire, and succeeded in fixing attention upon the carbolic acid rather than the conception of which it was only a detail.

But Lister, who had generously acknowledged his debt to Pasteur, had no desire to rob anybody of laurels.

And he had made no claim, as he mildly pointed out, to have been the first to clean wounds with carbolic acid. There were other agents, indeed, that would probably be as effective. And it was the whole method of approach with which he was concerned—the recognition by others of all that was meant and could be achieved by surgical cleanliness. How limited that was he had already learned when his sister Bella, a few months before, had come to him with a growth that could only be removed after a severe and extensive operation. Left alone, it was bound to be fatal. But under the usual conditions an operation would have been no less so. And both Paget in London and Syme in Edinburgh had considered it unjustifiable. Lister had been confident, however, that his methods could make it safe. And profoundly as he had shrunk from the ordeal, he had successfully removed the growth and its appendages, without a trace of secondary infection.

But with regard to ligatures he was still uneasy. And in completing an operation that was to heal by first intention, it was essential to obtain a substance that could be left inside in the body without any danger of future suppuration. This he had tried to secure, and not without considerable success, by sterilizing the silk then in use. But in one of his cases, dying from another cause, nearly a year after he had ligatured an artery, he had found the silk embedded in fibrous

tissue, but not entirely free from pus. He spent the next year, therefore, considering alternatives; decided upon catgut, made from sheep's intestines; and utilized his Christmas holidays—the last he was to spend at Upton—in trying it upon an animal. With the help of his young nephew, Rickman Godlee—the boy who was afterwards to become President of the Royal College of Surgeons—he operated upon a calf and tied one of its arteries. And when the wound was re-opened at the end of a month, he was delighted to discover everything clean, and the catgut, itself an animal substance, safely absorbed by the surrounding tissues. Later, in other hands and as the result of using imperfect material, there were to be occasional disasters—due to the slipping of the knot owing to premature softening, or the loosening of the ligature itself. But by using weathered gut, packed in carbolized oil, he reduced the peril of this to a minimum —the final death-blow, if such had been needed, to Jamie's system of Acupressure.

There had thus been established in the heart of a manufacturing city—and within a few yards, as it happened, of a forgotten burial ground—a couple of wards, packed to the brim with every kind of surgical case, from which the smell of decay had been banished for ever, in which wounds were healing with magical speed, and wherein lay patients recovering from operations that no other surgeon would even have con-

sidered. It is all the more strange, therefore, that—at any rate from his own country—so comparatively few of them should have been aware of it, or been able to grasp, when they tried to copy him, the general principles upon which he worked. Deciding, for example, to treat a compound fracture by what he believed to be Lister's method, such an authority as Paget, without carbolizing the wound at all, hermetically sealed it with collodion, and then—some twelve hours after it had first been dealt with—having put a carbolic dressing upon the top, was regretfully unable, as he informed his students, to perceive that it had done any good.

But if his seniors and contemporaries stood aloof, youth, as Lister said, was on his side. And his house-surgeons and dressers, and the students, who saw what he was doing, were enthusiastically his disciples. Graduates from other schools, too, such as his cousin Marcus Beck, were coming to Glasgow and going away converted. And there was already a stream of observers from abroad, anxious to learn all that he could teach. Such were Lucas Championnière from France, later to become surgeon to the Hôtel Dieu in Paris, who returned to publish in 1869 the first French article on Listerism, and Professor Saxtorph of Copenhagen, who had gone back to Denmark about the same time, with the result that, a year later, he was able to report that there had been no case of blood-poison-

ing under his charge; that all the compound fractures, with which he had had to deal, 'some of them very severe ones,' had healed without suppurating; and that all his amputations had recovered.

That was in 1870, and although Thiersch of Leipzig was a little earlier in the field, it was the Danish professor whom Lister seems to have regarded as his first true apostle upon the Continent. Moreover, his report came at a time when reinforcements were particularly welcome, although Lister had achieved by then the highest position in Scotland, the chair of Clinical Surgery at his beloved Edinburgh. This had come about owing to the resignation of Syme, who had sustained a stroke in the previous April, and who had thought it wise, though he partially recovered, to curtail some of his duties. The way had become open, therefore, for Lister's return. And early in July he had received a letter, amply justifying his belief in the fervour and support of the rising generation. Begging him to apply for the post, it was signed by over a hundred Edinburgh students, since 'your method of antiseptic treatment constitutes a well-marked epoch in the history of British surgery, and will result in lasting glory to the Profession and unspeakable benefit to mankind.' And in spite of the efforts of Jamie to have the chair abolished, he had been duly elected on August 18th.

In the words of John Brown, it had been 'great and

comfortable news,' saddened as it was to be by domestic loss—the withdrawal of the two minds, upon which he had so long relied, and never in vain, for advice and help. In September 1869, a few years after his mother, his father had died at the age of eighty-four. And shrined in a sentence or two written after his death, is the whole story of their relationship. 'I dreamt two nights ago,' he said—the home had just been broken up—'that I came down in the morning and was met by Papa, firm and erect and beautiful as of old. He shook me warmly by the hand and kissed me as he used to do when I was a little boy. I asked him if he had slept well on his long journey. He said No, but that he was *quite* well, whereat I rejoiced.' In the following June, too—a month after Jamie—the indomitable Syme was carried to his grave. And Lister had thus become, by the autumn of 1870, the leading surgeon north of the Tweed.

But to Edinburgh at least he was already much more than this. And if he was always too reserved in the presence of strangers to have had a large circle of intimate friends—if the tall figure, with the Victorian whiskers, the fresh-coloured cheeks and contemplative blue eyes, generally inspired something of awe in the least reverent of students—he was never so beloved or his practice so large as during the seven years of his Edinburgh professorship. It was true that the dinner-parties to which he religiously asked his

dressers in his rather austere Charlotte Square house, tended to be escaped from, with sighs of relief, at the earliest polite opportunity; and that his solemn-faced butler—though the wag of the servants' hall, and perhaps the only one in history that has collected butterflies—exuded a dignity little less than paralysing to nineteen in its first evening dress. But in the theatre and the lecture-hall it was otherwise. Not even Jamie had drawn greater audiences. Every operation was performed in the presence of four or five hundred spectators. And as one of his patients told a dresser, 'when the Professor comes into the wards, I feel as though God Almighty Himself had come in.'

In spite of the apathy, too, of London and its great men, the system for which he stood was not to be denied. And the next few years were to be rich with experiments in making it fool-proof for other people. It was in Edinburgh that he developed the spray, raining carbolic about him while he operated—afterwards to be given up, to the relief of his followers, but at least an object-lesson while it lasted; the gauze dressing, later impregnated with mercury, now a commonplace in every hospital; and the rubber drainage-tube for deep abscesses, of which Queen Victoria, as it happened, was the first recipient. Having been summoned to attend her in 1871—he had succeeded Syme as her surgeon in Scotland—he had found her suffering

from an inflammation of the arm-pit that necessitated a minor operation. This had been successful—an incision to let out pus—but the subsequent dressing had been less so. And it had suddenly occurred to him that it was acting as a plug rather than a conductor of matter from the recesses of the wound. He had therefore devised, walking about the Balmoral gardens, a rubber tube perforated here and there, with the result that, in a day or two, the wound was clear, to his own and Her Majesty's great relief.

It was also at Edinburgh, though again with ideas which were to be modified as he grew older, that he began to work, with his usual exactness, on the infant science of bacteriology. And although he believed for a time that the same micro-organism might assume different forms in varying surroundings, he soon came to realize, helped by Pasteur, that they existed in specific and constant groups. Indeed, he was the first —though, thanks to Davaine and Koch, particular diseases were being associated with particular bacteria —to obtain, by a process of classical beauty, a really pure culture of a bacterium. And his practical results, as brilliant as they had been in Glasgow, were slowly revolutionizing European surgery. In 1872 von Volkmann of Halle, after nearly closing his hospital in despair, had not only freed it from its continual epidemics, but was performing operations of which he had never dreamed. In 1874 the whole of Lister's

works were translated into German. And in 1875 von Nussbaum of Munich, where eighty per cent. of his patients had been developing gangrene, by rigidly adopting the methods of Lister had seen it completely disappear.

This was the year in which Lister and his wife decided once more to visit the Continent. And the lazy holiday, begun in the South of France with Arthur and their sister-in-law and two of their nieces, ended rather to his surprise—he hadn't realized his fame—in a sort of triumphal procession. On arriving at Munich they were received at their hotel by Professor von Nussbaum in full evening dress, with a bouquet for Mrs. Lister, and news of a dinner that proved, in the end, to be a state banquet. Attended by most of the professors of the University, members of the Government and Town Council, it was followed by a deputation of Munich students, and the process was repeated at Leipzig. Here Professor Thiersch proposed his health at a second feast to four hundred guests. Von Volkmann from Halle proposed that of his wife and the ladies who were watching the event from the gallery. And the songs and toasts and congratulatory speeches lasted until well after midnight. At Halle, too, they were welcomed with equal warmth. And they arrived at Berlin just in time to see the great von Langenbeck perform his first antiseptic operation.

With the battle at home still undecided—though he had no doubts as to its final issue—it had been an inspiring journey to come home from. And in the following year he was to make another. Under the presidency of Dr. Gross, the urbane old head of pre-Listerian American surgery, the fifth International Congress of Medicine was being held at Philadelphia. And thanks to his efforts, Lister was invited to take charge of the surgical section. He was also accorded, at the concluding dinner, the place of honour on the President's right hand. And with the ceremonies over, he spent a few idle weeks sauntering about Canada and the States.

But another change, much more complete, and by far the most difficult, was at hand. The Professorship of Clinical Surgery at King's College, London, held by Sir William Fergusson, became vacant. And an effort was made, but by no means a unanimous one, to have Lister appointed. Brilliant as Fergusson had been, and perhaps the most popular surgeon in London, only an exceptional man, it was urged, should follow him. And Lister's claims were held to be greater than those of the local candidate, Mr. Wood. Ultimately Mr. Wood, however, who was already on the staff, was given the chair that had been Fergusson's. But Lister presently agreed, to the profound distress of Edinburgh, to accept another that had been specially created for him. And in 1877, at the

age of fifty, he took his rather doubtful leave of Scotland.

For a long time he had hesitated. More than seven hundred students had signed an appeal imploring him to stay. And he had made certain conditions not very agreeable to his future colleagues. Four of his helpers, for instance, were to accompany him from Scotland to see that his instructions were properly carried out—Watson Cheyne and John Stewart, both qualified men, to be his house-surgeon and clerk, and a couple of dressers, Dobie and Altham, chosen from his students at Edinburgh Infirmary. But they had reluctantly agreed, though the nurses had views of their own. And for many reasons the South had begun to attract him. Save for a younger man or two, such as Howse at Guy's and Marcus Beck at University College, London had steadily refrained from taking his work seriously, and some of its leaders were actually hostile. And apart from the missionary effort to which this had challenged him, there were other and more intimate temptations. Childless himself, he was devoted to children—he had once, in the presence of a distinguished company, gravely obliged one of his smaller patients by repairing her doll before moving on—and he was never so happy as amongst his nephews and nieces, and particularly at Leytonstone with Arthur's family of seven. For some years, too, he had shared with Arthur a house at Lyme Regis,

where he had spent many of his holidays. And a London home would bring him once more within easy reach of his own people.

That was to be his chief consolation, perhaps, for a reception at King's even more chilly than he had imagined—with the nursing sisterhood then in possession quietly obstructive to his new-fangled ideas, and a handful of bored students to remind him, at his lectures, of the enthusiastic hundreds that he had left at Edinburgh. His colleagues on the staff, too, although they were friendly, were not disposed at first to be anything more than this. And as for the Edinburgh quartette, one of them has recorded that 'we four unhappy men wandered about, now in the wards of King's, now through older and more famous hospitals, and wondered why men did not open their eyes. In these wards the air was heavy with the odour of suppuration, the shining eye and flushed cheek spoke eloquently of surgical fever. We would show them how things should be done. But how? We had no patients.' And indeed for some time, it appears, Lister had difficulty in filling the few beds that had been allotted to him. Nor was his private practice, then or in the future, ever as great as it had been at Edinburgh. For one thing, owing to his absorption in the task of the moment, he was apt to forget the claims of the next, with the result that, in the ordinary affairs of life, he was incorrigibly un-

punctual. And having accepted a case for operation, and in view of the general ignorance of his procedure, he considered it his duty—to the annoyance of certain practitioners—personally to supervise all after-treatment.

But for private consulting work he was not over-anxious. He was already as rich as he had any desire to be. And in the hospital world that he had come to conquer, seeing, as he hoped, would be believing. And so it proved. He had hardly settled down at King's when, to the astonishment of his colleagues, he proceeded to cut down upon a broken knee-cap and wire the two fragments together. For London, though Hector Cameron had revived it in Glasgow, it was an unheard-of operation. And 'when this poor fellow dies,' said a scandalized surgeon, 'some one ought to proceed against that man for malpraxis.' But the poor fellow recovered with a perfect limb. And a few days later Lister was removing a malignant growth, so extensive that once again it seemed an unjustifiable thing to do. Nevertheless, free from pain and fever—and for all the world, if it cared, to come and inspect—at the end of forty-eight hours the sufferer was sitting up and comfortably reading a newspaper. This meant the conversion of Mr. Wood, who had not unnaturally resented Lister's coming. And it soon became impossible for surgeons elsewhere to ignore the results that were being obtained. It was

all very well for Sir William Savory, as he afterwards became, to seek refuge in statistics—to show that, at St. Bartholomew's, in the previous three years, there had only been 137 cases of blood-poisoning and erysipelas. The statistics themselves, to the minds of others—and Lister let it go at that—were the case for the prosecution.

Moreover Prescott Hewett, the President of the Royal College of Surgeons, and Sir James Paget, also of St. Bartholomew's, had received further evidence in a private case that Lister could do what he said he could. Each of them had been consulted by a young woman of means, with a harmless but very large and disfiguring tumour. And both had advised that the risks of infection were too great for its removal. Paget had suggested, however, that she should visit Lister, who had no hesitation in recommending this to be done. And he had subsequently dissected it out, in the presence of them both, the recovery being complete, clean and painless. After a good deal of discussion, therefore, there was an informal meeting at St. Thomas's Hospital to consider the whole matter. And for Lister's opponents, though the battle was not yet won, this was the beginning of the end. Gathered to hear him—and prepared, for the first time, seriously to face espousing his cause—were Jonathan Hutchinson, William MacCormac, Spencer Wells and Tom Smith, while Sir James Paget, in his great-hearted

way, publicly referring to Lister's method, said that 'his success has been so great in contrast with my failures that I cannot for a moment doubt its value.'

After holding out, therefore, for some fifteen years, London was at last beginning to yield. Supposing him to have been autocratic and his claims excessive, it had found him modest and able to uphold them, with the inevitable consequence that he found himself bidden to the higher ranks, as it were, of medical statesmanship. In 1880, having already succeeded Christison as a member of the General Medical Council, he was elected to the Council of the Royal College of Surgeons. And in 1881—they had been estranged by the Franco-Prussian War—he had the deep satisfaction, at the International Congress in London, of bringing about a meeting between Koch and Pasteur, the two greatest living bacteriologists. This was followed by his baronetcy in 1883. In 1885 he received the Prussian *Ordre pour le Mérite*—limited, at the time, to a membership of sixty, of whom only half were allowed to be foreigners. And in 1886 he was serving upon a commission to inquire into Pasteur's new treatment for hydrophobia. The commission, as it was bound to do, reported favourably—even in England, fifty years ago, there were some forty deaths annually from the bites of mad dogs—and in 1889 he was pleading for a British replica of the Pasteur Institute in the Rue Dutot. Here Pasteur was continuing his pioneer

work on vaccines, deliberately retaining the word in honour of Jenner. And the British Institute, later to be called after Lister himself, was duly established in 1891, one of its first tasks being the preparation of the newly-discovered diphtheria antitoxin.

Meanwhile, in 1890, Lister had been present at Berlin when the International Congress had been presided over by Virchow. And on rising to propose the health of Professor Thiersch, with memories of Munich in earlier days, he had been nearly overwhelmed by the thunders of applause and the throngs of surgeons trying to touch glasses with him. Even more rapturous, in 1892, was the greeting at the Sorbonne, when in the midst of a gathering numbering nearly three thousand, the President of the Republic and all the ministers of state, he read an address to the seventy-year-old Pasteur in the grateful names of medicine and surgery. And it may have been a consolation to him to remember that his wife had lived to share it.

But their happy life together, with its long holidays in Norway, the Auvergne, and the Pyrenees—with its fly-fishing, skating and country rambles—had at last run its course. And after her death at Rapallo in the following spring, Lister was never quite the same man. By then he was sixty-six, and had retired from his professorship. He was bidding farewell to his beds at King's. His private practice had ceased, and

for a time his interest in life also. But his sister-in-law, Lucy Syme, suddenly transformed from a querulous invalid into a capable housekeeper, took charge—though its hospitalities were never revived—of the sombre house in Park Crescent. And the foreign secretaryship of the Royal Society, to be followed, a couple of years later, by the Presidency, led him back again, as his friends had hoped, into some sort of communion with his fellows.

Little as he had cared for them, too—and less now than ever—his country and the world continued to heap honours upon him. And he did his best, and not without an occasional glint of humour, to fulfil the contingent obligations. In 1897 he became the first medical peer, and was given the freedom of Edinburgh in 1898. He was present, as Sergeant Surgeon, at the operation upon King Edward, for which the coronation had been postponed—an operation, as the King afterwards reminded him, that he alone had made possible. He was one of the first recipients of the new Order of Merit. His eightieth birthday brought him telegrams from the ends of the earth. In the following June he was made a freeman of London, and a few months later a freeman of Glasgow. And it was only in deference to his express command that, in 1912, having died in his sleep, he was borne from the Abbey on February 16th to be laid at Hampstead beside his wife.

So ended the life of which, fifteen years before, Weir Mitchell had written from America that 'surely in all the great story of surgical progress there has been no one man who has given to his fellows a gift so great.' And if the dusk had fallen a little upon its last few years, it had never completely overcast them. Even at Walmer, to which he had retired, meaning but never persuading himself to come back, he could still discuss ligatures with Rickman Godlee or bacteriology with Professor Bulloch. And in spite of the Quaker sobriety that had once been a little shocked at hearing Darwin say 'good Lord,' for a privileged group there had always been a Lister unreported to the world—an adored uncle, for instance, down from London, propounding a riddle at a Christmas party, and pink with alarm lest someone, who had heard it before, should prematurely disclose the answer.

X

OSLER

In the year 1837, when Lister was ten years old, there had sailed from Falmouth a young married couple. The husband, grey-eyed and sturdily built, was the Reverend Featherstone Osler, the son of a Falmouth merchant and the descendant of a long and respectable line of traders. For some years he had served in the navy, attaining the rank of sub-lieutenant, but, leaning towards the Church, had exchanged this for Cambridge, whence he had been ordained a few weeks earlier. His wife, who was slender and dark, but physically strong—she was destined to see her hundredth birthday—had been a London girl living for some time with an uncle in Falmouth. And the two had become engaged about three years before, soon after Featherstone had left the navy. They had looked forward to a quiet country living, but there had recently been pressed upon them the necessities of Canada, the almost complete dearth of any organized spiritual influence in the outlying English settlements of Ontario and Quebec—not yet christened as such and still known as Upper and Lower Canada respec-

tively—and being both ardent and adventurously inclined had at once decided to go there.

With all their worldly goods, therefore—not very much, but including, we are told, a tin of a particular local confectionery—they had embarked. And seven-and-a-half weeks later they duly arrived in the St. Lawrence. In the history of Canada it was an uneasy period. It was true that the American invasion of seventeen years before had evoked, for the first time, a spirit of colonial unity. But local jealousies were strong, and even bubbling into armed conflict. In Lower Canada, still predominantly French and Catholic, the seigneurial system was dying hard, while its Protestant immigrants looked askance at the official policy of religious tolerance. In Upper Canada, largely populated by loyalists driven north after the War of Independence, the newer comers from the English manufacturing towns, the crofts and cabins of Scotland and Ireland, were being looked down upon and occasionally treated as a somewhat inferior kind of interloper. The boundary between Nova Scotia and the American State of Maine was still undelimited and a matter of acute controversy And west of the Great Lakes as far as the Pacific, over a continent still regarded as incapable of agriculture, the Hudson's Bay Company, with its scattered traders, was the only representative of civilization. There were no railways. The cost of sending a letter to England

was some three or four shillings. And although four years earlier the first Canadian-built steamer had crossed the Atlantic, the million and a quarter people who formed the total population—chiefly concentrated in the eastern provinces—were living more or less precariously upon the land as farmers, lumbermen and trappers.

Such was the Canada in which the Oslers found themselves, landing in the first instance at Quebec, where they were warmly welcomed by Bishop Mountain, the second Protestant Bishop of the diocese. Thence, by way of Kingston, they proceeded to Toronto, and after a two days' journey by road, arrived at the little settlement of Bond Head and their first Canadian home. This consisted, they found, of two tiny rooms, a sitting-room and bedroom, with a barn for the luggage, upon what was then the verge of a largely unsettled and primeval forest. The nearest post-office was twelve miles away, the nearest doctor fifteen. The surrounding farms had just been hewed, or were still being hewed, out of the timber. There was no church, and it would have been difficult to conceive a greater contrast between the reality and the setting that they had been picturing for themselves, only a few months before, as the probable scene of their married life.

Besides their own youth, however, and the happy gregariousness that their family was later so abundantly

to share, there were other influences to aid them. The neighbouring settlers of all denominations seem to have been resolved to give them their chance, and having summed them up, came to their help in a very practical way. Within a short time a couple of churches had been built, some seven miles apart, and a rather more adequate dwelling provided to serve as a rectory. For the young minister it was less of a home than an occasional sleeping-place between arduous journeys, but for the settlement as a whole, thanks to his wife, it was soon the centre of a score of activities. In spite of the birth of two healthy babies, she had established classes for the surrounding children. And when, at the end of four years, a temporary breakdown necessitated a holiday for the family in England, there were waiting to welcome them on their return no less than sixty wagon-loads of people, who insisted on accompanying them from the nearest landing-place throughout the twelve miles to the rectory.

It was the sort of tribute that must have been an ample reward for a second farewell to the comforts of England. And for the next sixteen years they remained at Bond Head, nine children being ultimately born to them. Of these, William was the sixth son, and by this time—he was born in 1849—Bond Head could boast of a schoolhouse, a doctor, and some two hundred inhabitants. Moreover there had settled in the neighbourhood two or three more families of

gentle birth and education, and the Oslers' rectory with its growing brood of generous, sporting and quick-witted children, had already gathered these into its arms, and was busy initiating them into the life of the community. From the material standpoint, this was still a struggling one, and the rector's portion of it was no exception, although he had acquired a small farm upon which the elder boys had already begun to work in their spare time. Mrs. Osler's way, too, of disposing of her infants during her busier hours seems to have been a simple one. And we read of the future Sir William at the end of a tether, sharing a peg with one of the calves.

Financially regarded, indeed, as many years afterwards he was to confess to one of his audiences, his particular outlook at this time could scarcely have been called an auspicious one, 'born seventh,' as he explained, 'in a missionary's family, in the backwoods of Ontario, with twins ahead.' But then, as he might have added, it was no ordinary family—not in the sense, perhaps, of accumulating wealth, but of being able to prove, given the right spirit, how little this matters to the finest sort of achievement. Thus, of the barelegged boys running about the farm, the eldest was to become a Justice of the Court of Appeal of Ontario; another—B.B., as he was affectionately called—the leading Queen's Counsel in the Dominion; a third, Edmund, the President of the Dominion Bank

of Canada and a Director of the Canadian Pacific Railway; and himself the Regius Professor of Medicine at Oxford, and one of the best-known physicians in the world.

Of Osler's school days it can probably be said that they were those of the majority of backwoods youngsters, although a certain element of mischief, which was never quite subdued in him, seems to have perturbed some of his earlier teachers. It at any rate led to his removal from the school at Dundas, whither his parents had migrated in 1857, and it is to be feared that he left his next school upon the shores of Lake Simcoe not wholly regretted by those in charge. But at Trinity College School, Weston, near Toronto, to which he was sent at the age of sixteen, he was lucky enough to meet, and be profoundly influenced by a very remarkable man.

This was Father Johnson, its warden—the school was an Anglican one, moulded on English lines—a devout High Churchman, but also a scientist, and especially a naturalist, of infectious enthusiasm. Here for the first time, Osler came under the spell of the microscope and, scarcely less formatively, of Sir Thomas Browne, of whose *Religio Medici* he was later to possess a copy of every edition issued up to 1850, Looking back, indeed, it might be said that these were the twin stars of his life, although to his own world. at this time, he was no more than an average schoolboy

—not very big, but a good all-round athlete, with lively, rather deep-set, brown eyes, and the curious almost Indian-brown complexion that he had evidently inherited from his mother. Even in his own mind his future was not yet decided, and when, in due course, he proceeded to Trinity College, Toronto, it was with the general intention of studying theology and following in the footsteps of his father.

At Toronto he was to meet, however, the second and even more potent of his life's earlier influences in the shape of Dr. Bovell, the chief organizer of the Toronto Medical School. He had been deeply moved, too, by the revolution in thought just initiated by Darwin and Huxley, and by the autumn of 1868, in his twentieth year, he had definitely enrolled himself as a medical student. Afterwards he was to become supreme as a general clinician, teacher and writer. But his initial approach to medicine was naturally determined by his love of microscopy and the study of natural structures. And he might very easily, in his first years, have drifted into the career of a pure biologist just as a little later he might have become—and probably would have done in a succeeding generation —a whole-time pathologist, devoted to the elucidation of post-mortem and morbid tissues.

Probably, in the end, it was his love of people, and particularly of bedside teaching, that settled matters. But throughout his years of apprenticeship, he

remained in close touch with Father Johnson, spending many of his holidays collecting and examining and annotating specimens for his former schoolmaster. In 1870 he entered McGill University and obtained his first insight into practical medicine as a clinical student in the wards of Montreal General Hospital. This was then, as he afterwards described it, 'an old coccus- and rat-ridden building,' in which both surgical and medical cases were haphazardly treated in the same ward. But it was in Montreal that Osler met Dr. R. P. Howard, the third of his youth's great friends and mentors, and having at last found his true vocation, he put every ounce of himself into his work. In fact, 'Lazarus was nothing,' he once wrote to his sister, 'to what I have been for the last three weeks', and two years later he had taken his M.D. with a special prize for his thesis. This, characteristically, had been accompanied by thirty-one microscopic and other preparations, and the whole had been stamped, as his examiners agreed, with originality and research.

That was in 1872, and since his qualification had found his purse almost empty, the next few months, from the standpoint of his later career, were of a somewhat critical nature. The temptation to earn money, to sacrifice a problematical future for an immediately lucrative present, must have been a strong one, although to the end of his life he cared very little for personal wealth. But happily his brother Edmund,

who had just become engaged and was planning a visit to Scotland to see some of his future relations, conceived the idea of asking William to accompany him, and generously offered to pay his expenses. It was typical of the family. It gave Edmund just the companion that he wanted. And for his younger brother it was to prove the first of a life-long series of similar journeys. For, having enjoyed the hospitality of his brother's hosts, and visited Dublin, Edinburgh and Glasgow, he made his way to London, where for the next fifteen months he studied physiology under Burdon Sanderson.

He also enlarged his acquaintance with the writings of Coleridge and Lamb; soaked himself in the art and architecture of England—'though we could put the whole island,' he enthusiastically wrote home, 'into one of our lakes, yet there is more local interest in one parish than in the whole of our Dominion'; took his licentiate of the Royal College of Physicians; spent some months in Vienna and Berlin; returned to London again and Burdon Sanderson, whom many years later he was to succeed at Oxford; listened to Canon Liddon at St. Paul's; toyed with the idea of entering the Indian Medical Service; refused a lectureship in Botany at McGill; and finally, in 1874, came back home with a whole new world of friends and experiences. Wisely for himself, too, if not for his pocket, he had remained uncommitted to any form of

practice. And it is interesting to note that it was not until his return that he earned his first medical fee—fifty cents for removing a speck of dust from the eye of a patient in Dundas.

He was then apparently assisting a local practitioner. But in July, thanks to his work abroad, he received the offer, which he decided to accept, of a lectureship in Physiology at McGill University. Monetarily it was a very modest one, and we learn from an early account-book that he hired a room for two pounds a month, spending another eight upon a ton of coal, a desk, chair and bookcase. Of the lectures themselves, however, let a contemporary speak. 'They began,' he wrote, 'with an explanation of the old Edinburgh term, Institutes of Medicine. Then, in a bold outline, he sketched inorganic and organic matter, vegetable and organic life, vital force, and closed with a description of cellular life and an outline of future lectures. From that hour physiology was an attractive study and the lectures like unto gods.'

That may have been an exaggeration on the part of a student, listening for the first time to a new note, not only in Canadian but, as was afterwards to be made manifest, in American university life. But it is no exaggeration to say that they marked the beginning of the renaissance of McGill University. By the end of a year, and at the age of twenty-six, Osler had been raised to the status of a Professor, and temporarily

obtained charge, during an epidemic of small-pox, of his first beds in the Montreal General Hospital. He took the disease himself, but only mildly, succeeded in amplifying his income by a hundred pounds, and spent the greater part of it in equipping his physiology class with some fifteen microscopes. Better still, at any rate in his own eyes, he had proved his worth as a clinician, and the following year was made pathologist to the Hospital and given command of the post-mortem room. Here again he introduced new methods, and within twelve months of his appointment had collected notes of a hundred thoroughly systematized examinations. He had also started a medical society amongst the students for the informal discussion of cases, and in the year 1878, although not yet thirty, was made full physician to the hospital.

This was over the heads of three assistant physicians —an inexcusable promotion, as he afterwards smilingly admitted—but it can be regarded as certain that, if it caused any heartburnings, these were of the briefest duration. Heads may have been shaken, as they undoubtedly were, over some of the young physician's idiosyncrasies—his antipathy to drugs, for example, of which he was congenitally suspicious, and of which, in his own practice, he was remarkably sparing. There were always occasions, too, never quite predictable, when his irrepressible humour would come to the surface either in his own person or the vicarious shape

of one Egerton Yorrick Davis. This gentleman, so his creator alleged, was an ex-American Army surgeon, who had sojourned for his sins amongst various remote and unpronounceable Indian tribes. Here he had observed and would sporadically report the most astounding medical cases, one of which actually appeared, to its editor's subsequent confusion, in a responsible technical journal. Oftener he would write, in a not altogether unfamiliar hand, to Osler's friends and acquaintances, and in later years, to the perplexity of journalists, would occasionally represent him in hotel registers.

But neither envy nor malice could live in Osler's presence, and he was soon busy within the hospital bringing about changes comparable with those he had already initiated in the University. 'He began,' wrote one of his fellows, 'by cleaning up his ward completely. All the unnecessary semblances of sickness and treatment were removed; it was turned from a sick-room into a bright, cheerful room of repose. Then he started in with his patients. Very little medicine was given. To the astonishment of everyone, the chronic beds, instead of being emptied by disaster, were emptied rapidly through recovery; under his stimulating and encouraging influence the old cases nearly all disappeared; the new cases stayed but a short time.'

Prior to this he had made another brief trip to England in order to take his membership of the Royal

College of Physicians, and visiting Edinburgh, came to the odd conclusion that 'Listerism' was not making much headway. Unlike Lister, indeed, he was curiously slow in recognizing the enormous significance of Pasteur's work—probably because in England the theory of Spontaneous Generation, although it had received its death-blow from the French professor, was enjoying an Indian summer, at the moment, thanks to the advocacy of Bastian. Nobody was ever franker, however, in acknowledging his mistakes, or readier to explore a new avenue. And in 1881, when he attended the International Congress that had brought Koch and Pasteur together in London, he had the opportunity of hearing them in person explaining their theories and results. He still remained, perhaps, not wholly convinced. But when in 1882 came Koch's discovery of the bacillus of tuberculosis, he fully realized, with all that it meant, the advent into medicine of bacteriology.

Meanwhile he had come to be recognized not only as the most inspiring teacher but one of the ablest physicians in Montreal, and in 1883 he received the honour of being made a Fellow of the Royal College of Physicians. In the next year he again visited Europe, meeting Koch in Berlin, and while still abroad he was offered the chair of Medicine in the University of Pennsylvania at Philadelphia. Taken by surprise and devoted to Montreal, he decided at last that he

would toss for it, and was sufficiently strong-minded, when the coin indicated Philadelphia, to abide by the result. Not until he returned, perhaps, was he fully to understand the depth of feeling that his decision had caused—a degree of regret, almost amounting to consternation, amongst his fellows at McGill University. But the die had been cast, not wholly by himself, he would probably have been mystic enough to believe. And at the age of thirty-five—he had been a professor for nine years—he bade a final farewell to his work in Canada.

So began, in the October of 1884, what was to be the richest period of his life, the twenty years that he spent in the United States, divided between Philadelphia and Baltimore. By the end of them he had become, though none the less British, the best beloved doctor in America—a consultant by whom, if he would only consent to come, almost any fee could be commanded; who would travel all day and most of the night, without any fee at all, to help the obscurest colleague; whose home was synonymous with the wisest, gayest and most disarming of hospitality; and whose text-book had become the portal through which almost every English-speaking student was entering the profession of medicine. As at Montreal, however, so at Philadelphia, there were at first a few natural criticisms. For one thing, the young Canadian, with his informal garments—lectures at Philadelphia had

hitherto been extremely dignified—his easy attitude upon the platform, lounging against a wall or sitting upon a table, and his superficially unimpressive delivery, were entirely contrary to established precedents. But through the everyday manner, the matter of his teaching was quickly perceived to be anything but commonplace, and his methods of individual bedside instruction were a revelation to his new students.

Moreover, here as everywhere, his transparent modesty, harnessed though it was to a tremendous driving-force, forbade enmity even from those seniors who had deplored his appointment as a stranger. He was soon, indeed, to make amongst them some of his closest friends, including Weir Mitchell, the famous doctor novelist, and Mr. and Mrs. Gross—the former being the son of the great surgeon who had welcomed Lister to Philadelphia, and the latter the great-granddaughter of the Paul Revere, hymned by Longfellow for his midnight ride. His ability had begun to be recognized, too, on the other side of the Atlantic. In the year 1885 he was invited to come to England to deliver the Goulstonian Lectures. And the handling of his subject, Malignant Endocarditis, was such as to reveal him to his new audience as a teacher of the highest order. It was the first really broad, clear and thoroughly documented account of a not uncommon, but hitherto vaguely recognized, form of cardiac dis-

turbance. And it stamped him upon the English mind, a little contemptuous, perhaps, of colonial and American medicine, as a man of whom any university in the world might not unreasonably be proud.

For four years Osler remained at Philadelphia, throwing himself as usual into the student life, establishing new laboratories, and beginning to undertake a limited amount of private consulting work. Unlike most of his colleagues, who at that time were also engaged in general practice, he made it a rule, as he had done in Montreal, to be a consultant in the strictest sense—only to see patients, that is to say, who were brought to him, or whom he was invited to visit, by their own doctors. Amongst these latter, as it chanced, was Walt Whitman, in his little two-storey frame house at Camden, the lower part of him buried, as Osler has described it, under a mass of papers, books and manuscripts, and his face 'lost in a hirsute canopy' of snow-white hair, beard and moustache. Of *Leaves of Grass*, Osler wrote that 'it was not for my pampered palate accustomed to Plato, Shakespeare, Shelley and Keats,' and deeply as he came to admire Whitman the man, he never seems to have been attracted by his verse.

But other eyes were upon the Canadian professor and his work at Philadelphia. Thanks to the munificence of a Quaker millionaire, there had come into

being at Baltimore the new Johns Hopkins University, and a hospital had been built under the same endowment. This, after twelve years' work, had now been completed upon modern and admirable lines, and it was decided to sound Osler with the view of his becoming its physician-in-chief. While the university itself, too, was in working order, the medical side of it, in its clinical aspects, was still waiting to be organized, and required a man of exceptional ability. By training and temperament it was just the opportunity of which Osler could take the fullest advantage, and his acceptance of the offer was to become a landmark in the history of medical teaching in the United States. As at Montreal and Philadelphia there were, of course, some initial complaints and jealousies. Osler himself was still under forty, and the three assistants chosen to work under him were all his juniors in age, and none of them was a local man. But their ability was soon beyond doubt. Osler's humanity did the rest. And with the publication, two years later, of his *Principles and Practice of Medicine*, further cavilling at the selectors' judgment became obviously impossible.

To the lay and even the present-day medical mind the significance of this volume is perhaps hard to realize. For not only had Osler succeeded, as somebody said, 'in making a scientific treatise literature,' but it was the first general text-book to embrace, and

re-issue in concise form, the enormous changes wrought in medicine by the discovery of microbic and bacterial infection. To the average practitioner of an older generation it was little short of a new gospel. In the medical schools it was to become the standard book that it has remained ever since. By the year 1905, when Osler came to Oxford, a hundred thousand copies of it had been issued, and only recently, in its revised form, it has been translated into Chinese.

For Osler himself it meant his definite establishment in the foremost ranks of his profession, and a few months later, to his deep and lasting happiness, it was followed by his marriage to Mrs. Gross, the widow of his old friend, and herself an old friend. 'I feel very safe,' he wrote at the time. And it was because everybody else so instantly felt the same, from the rawest student to the shyest professor, that there was scarcely to be an hour in which his home was not receiving or speeding guests. Every Saturday evening was consecrated to his fourth-year students, and strictly as he was obliged to map out his time, he was always accessible, if only for a moment, to any of his innumerable friends. And this was equally true of his patients. As one of them was to write after his death, 'he made you respect his time, but he also respected yours. A pose or an attempt at a serious chatter about unessentials was intolerable to him. But he was as merciful as he

was masterful, and from the poor and the genuinely afflicted he would even have borne being bored.' So with his colleagues in the profession—'three times,' said the same lady, 'I have seen him, when in consultation, smash the attending physician's diagnosis and turn the entire sick-room the other way about; but he left the room with his arm round the corrected physician's neck, and they seemed to be having a delightful time.'

In the year 1898 he was elected a Fellow of the Royal Society—three years earlier he had refused the Principalship of McGill University—and on visiting England in 1899 he received honorary degrees both at Edinburgh and Aberdeen. A couple of years afterwards, he received a similar honour from Yale, in company, as it happened, with Woodrow Wilson. And in 1904 he was invited to succeed Sir John Burdon Sanderson as Regius Professor of Medicine at Oxford.

From many points of view it was an unprecedented appointment. But the suggestion that it should be made had received powerful support, including that of Sir Herbert Warren, the President of Magdalen, Sir William Broadbent and Sir Victor Horsley. It was true that Osler was a colonial and that most of his professional life had been spent in the United States; that, as Dr. Weir Mitchell wrote to him, 'the medical school at Johns Hopkins is or was W. Osler.' But

he had already endeared himself to Oxford as a profound student of medical history, and a lover of the classics and the classic quality in all that pertained to the teaching of his art. In his familiarity with the continental schools he had probably no living English-speaking rival. And he was also a consultant with an immense experience of actual hospital and private practice.

Had the offer been made to him ten years earlier, it is more than possible that Osler would have refused it. Much of the architecture of his dearly loved school would still have been waiting completion, and there were campaigns to be fought on behalf of municipal sanitation and the new open-air treatment of pulmonary tuberculosis. But he was now fifty-five. There already lay behind him what to most men would have been more than a life's work. And to the book-lover side of him, especially as a medical historian, Oxford made an irresistible appeal. For the third time, therefore, he found himself bidding farewell to a university in mourning, recognizing though it did, with legitimate pride, the right of antiquity with which Oxford had approached him. In this, his alma mater McGill, and the University of Pennyslvania also shared. And it was as a farewell address to these universities of his youth that he wrote his famous essay on *The Student Life*.

For all his research, indeed, his myriad journeyings

from sick-bed to sick-bed, it is as the lover and teacher and inspirer of students that Osler will chiefly remain in memory. They are the cloud of witnesses overshadowing all others, and not only students in the sense of youth. When James Mackenzie, for instance, in 1905, was merely an unknown Lancashire doctor, laying the foundations of his work on the heart that was afterwards to carry the world before it, 'Osler came to me,' he told his friend Dr. McNair Wilson, 'when no other of the big physicians would have dreamed of coming.' And he might have added that, with the aid of Mackenzie's little girls, he made an apple-pie bed for his fellow-guest.

That was in the year of his coming to Oxford, and though his work there was less spectacular, this was inevitable, since he was now at an old university and not at the birth, as it were, of a new one. But he brought to a medical school that was perhaps somewhat in need of it the invigorating help of a cosmopolitan mind, and it was not very long before his house overlooking the Parks was as thronged with visitors as its fellow in Baltimore had been. For every Canadian and American doctor it became, as a matter of course, an English Mecca, and for most of the Congresses held in Oxford a sort of Anglo-Continental hotel and restaurant. With its growing library, too, of ancient and curious books, it was a happy meeting-ground for bibliophiles of all sorts, and the acknow-

ledged source, amongst other gifts to letters, of one or two of Kipling's loveliest stories.

For his closing years it was probably just the setting that Osler himself would have chosen, although, with the coming of the War, he was once more faced with every kind of administrative problem. The medical school, of course, had to be kept in being. But he became adviser-in-chief to every Canadian military hospital, and, characteristically enough, when it was all over, the first English spokesman for the stricken Viennese doctors. For this, at the time, he was not uncriticized. But it was wholly consonant with the man, whose 'work for others,' to quote a brother Regius Professor, 'was so incessant and his hospitality so unbounded that one always wondered where and when he had amassed and made use of his learning.'

But the War had taken its toll of him. To Lady Osler and himself—he had been made a baronet in 1911—it had meant the loss of their dearly loved and only surviving son. And though this had been borne, outwardly at any rate, with his usual courage and serenity, it was a blow from which, at heart, he had never really recovered before his own death in 1919. Of the faith in which he met this there is evidence in his writings. And he was probably content that it should have come to him at last, surrounded by his books and in his Oxford home and not before his work had

been accomplished. From the Bond Head rectory it had meant a long journey. He had held chairs in four universities. But it had fallen to him to prove, more than any man of his age perhaps, that the life of the spirit has no borders.

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